

# THE IRON AGE

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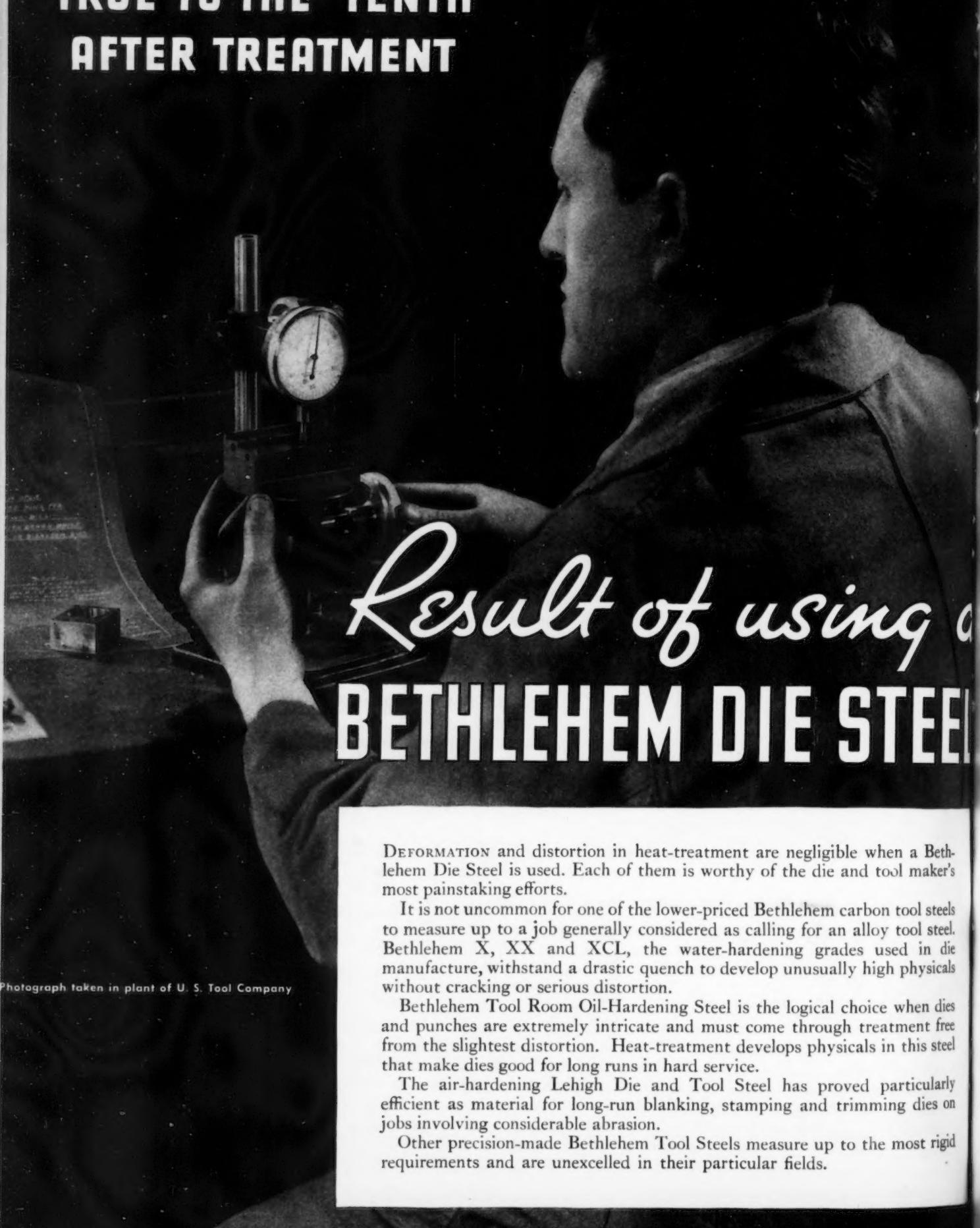
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**BETHLEHEM STEEL COMPANY**

# ... THE IRON AGE ...

MARCH 11, 1937

ESTABLISHED 1855

Vol. 139, No. 10

## Beneath the Roof Boards

**T**OIPPING off the industrial organizations of America are the "boards." Boards of directors have unusual responsibilities today. And these involve far more than the dollars and cents responsibility of maintaining profitable operations through the selection and control of good managerial talent.

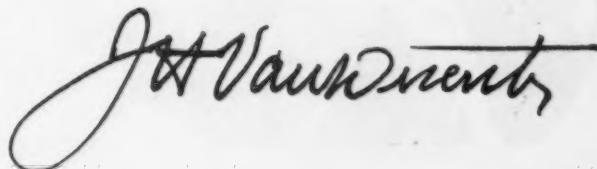
Board members are policy makers. They establish the rules of the game under which the company executives and their associates play it. Company policies must change with the times if companies are to keep up with the times. Some of our prominent industrial concerns are rebuilding their boards with that in mind. They want young blood and new ideas at the top as well as at the bottom.

A building must have a floor as well as a roof. Underneath the roof boards, represented by the directors, and at the base of all accomplishment are the workers, skilled and unskilled, representing the floor boards. One of our difficulties in the past, which accounts for some of our troubles in the present, is that there has been too much space between the two sets of boards. They have been kept too far apart, not by any design of management, which represents the connecting uprights between the two, but because of habit and precedent.

Today, not only management, but the boards which dictate the policies to be followed by it, must understand labor's aspirations and treat them with practical but sympathetic consideration. That is "in the cards", no matter what one may think about unionization, sit downs, or collective bargaining. And that requires more understanding as well as better mutual interpretation and explanation. Most of the present-day troubles are caused by lack of understanding of the other fellow's position.

We need to shorten the distance between the floor boards and the roof boards. One practical way to do it would be to pick a sound and sturdy floor board and make a roof board of him. In other words, elect, or better, permit your workers to elect one of their members to the board of directors.

If the man thus elected is the sort of man that I think he will be, your company will have made a splendid investment, not only in improved mutual understanding but in disclosing hitherto unrecognized profit possibilities.



# Why Compromise With Professional



WHEN the early craftsman received orders for more work than he could turn out in time, he hired a worker—the first employee, who worked for the first employer. Wages, hours and conditions of employment were mutually satisfactory, or the employment would cease by either party breaking the relationship. As firms grew, with more and more workers, the intimacy lessened, but the employment relationship was still there.

Unions of workers were born and associations of manufacturers were established. Collective bargaining was one of the principal features of unions. Some shops did not have unions — these were called "open shops." Those employing only union men were called "closed shops." The unions and the employers settled amicably, questions of wages, hours and working conditions. But the unions soon had professional paid organizers, to solicit memberships among "open" or non-union shops. This soon grew into a clash between employer and employee, and the title "Capital vs Labor" was coined, making a class distinction among those who should have had the interest of the business as a mutuality.

Then the "strike" was born.

Most strikes would not occur if left to the workers. They need the wages and do not receive the continuing salaries of their professional organizers and other officers of the union.

In passing, a few facts seem to inject themselves. Organized labor comprises only about ten per cent of the employees in the United States. The vast army of ninety per cent are still free workers, in the steel mills, the automotive industries, and in the numerous small factories.

As a university graduate, apprenticed machinist, and now general manager of a medium size machine works, I can speak first-hand. Strikes follow recovery of business, but not from labor unrest. They follow because the organizer starts his work during such periods of growing prosperity. He foments distrust and enlists a small percentage of employees into the ranks of his union. Then the strike starts with these few men intimidating a large number of weak brethren to stay away, temporarily, from work. The organizer tries to get these men to join the union, because more dues means more salary to him.

In shops where the organizer is not permitted to proselyte, that is, in "open" shops, strikes rarely occur, except where there is a real

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**F**RANK E. EBERHARDT is a university graduate, has been an apprenticed machinist and is now the general manager of a medium sized machine works. One might call him a typical American metal-working executive who

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grievance. In shops where the organizer is allowed to foment trouble, strikes practically always occur, grievances or no grievances.

Why compromise with professional labor agitators? It only means a stepping stone for another strike for more demands.

## Labor is Loyal

Our "labor" was loyal during the World War and is now loyal. But "organized" labor during the World War and now, is significant for the large number of strikes called by the professional agitators. Sometimes the organizers report to the papers that they are "trying to hold the men in leash," pending mediation. This is ridiculous but serious, because if it were not for the agitator, the men would flock back



# Labor Agitators?

By FRANK E. EBERHARDT  
President, Newark Gear Cutting  
Machine Co.

has worked with both hands and head. It is interesting and instructive to know what this typical executive thinks about the professional labor agitator of today and what his exploitation is doing to both employer and employed.

to work. They want work. We want them at work. But the agitator wants dues, and can only get them by fomenting trouble.

I recall a strike in a large pump works. Two hundred union men struck for recognition of their union, out of about 2,200 total employees. But these 200 secured a mediator from Washington and started things moving. By showing the true facts, the non-union 2,000 stayed at work and the agitator lost his pickings. This is often reversed and the 2,000 flock into the union, rather than be slugged and "scabbed."

In passing, a very important phase should be noticed. The union organizers do not like it, when the Government intervenes and asks for an election amongst the work-

ers to name representatives of the workers, because the organizers are not workers and thus cannot be named.

If the organizer had been kept away, there would have been no trouble, and this has been the history of the steel and motor car industries for about thirty years.

## The Mechanization Bugaboo

Another phase of industry is the popular conception fomented by union organizers that the use of machinery, especially "labor saving machinery," reduces employment. The machines are purchased to reduce costs by shortening time of operations, or by greater output than obsolete machines, and to expand the plant. We can answer this argument by referring to the United States Department of Labor, Bureau of Labor Statistics, Bulletin No. 605. It is very interesting reading, and not at all "dry."

On page 21 we read "The job opportunities and new occupations created by this expansion are notable as is the change in the character of the product and the speed and comparative ease with which it was produced."

On page 24 we read, "Primarily, the automobile created a mighty industry, employing directly and

indirectly, millions of workers." (And the automobile is a machine and its manufacture requires thousands of "machines.")

On page 25 we read, "technological developments which have made possible the production of 390,000 copies of a 62 page newspaper every day in the year have so expanded the market that the demand for labor in that industry has increased enormously."

I may seem to stress the employee's activities. On the part of the honest, fair, and average employers, it can be said that they rarely create labor disturbances. They seldom lock out their workmen. In fact they merely want to be left alone to produce goods. On the other hand, the worker will strike when spurred on by his professional paid officers. Nobody understands the word "strike." When a worker strikes, he really quits his work, and renounces the relationship of employer and employee, yet he makes demands upon his former employer. His demands denied, he stands around the plant, preventing unemployed men from getting work. The union official thus takes advantage of the miseries of the "army of the unemployed," by causing more unemployment in a time when everyone should be trying to put men to work.



# Chrysler Tools Up for a 6-Cylinder

By FRANK J. OLIVER

Detroit Editor, *The Iron Age*

TAKing advantage of a complete redesign of its "Gold Seal" 6-cylinder engine for 1937 Chrysler and DeSoto cars, Chrysler production engineers completely revamped the machinery set-ups for manufacturing the cylinder block, crankshaft, camshaft, pistons and connecting rods as well as other components. In the process, former capacity of 30 engines per hour was doubled. Millions of dollars were invested last summer in new equipment and in re-

tooling existing machinery for the new job. This particular article concerns the cylinder block line. Obviously it was both practical and economical to rebuild many of the 59 machines in the final line, and no attempt will be made to describe the step-by-step operations on each machine other than by reference to the accompanying table. Instead, some of the highlights will be given of the new machines which make this line one of the most up-to-date in the industry.

Cincinnati horizontal broaching machine. In the first set-up the broach bar and cutting edges of the tools are in a vertical plane so as to make the cut on the side of the block; in the second, the broach bar and the cutting edges of the flat tools are in a horizontal plane and are carried in a tunnel underneath the roller work conveyor. Only the work holding fixture protrudes above the level of the conveyor, Fig. 1. In loading this fixture, the block is slid in endwise until it hits a hardened steel block on the bed. The pan rail rides on rollers in a sling which is lowered when clamping action takes place. This motion is effected by two direct driven screw-down torque motors which apply positive clamping pressure to the top of the casting through heavy steel blocks as shown in the illustration. The self-locking screws resist any upward movement under the cutting load. As is the practice, the half round bearing is broached with a full round cutter which can be rotated 180 deg. when one half becomes dull. This is a high-speed steel insert. The finishing blades for the cap groove are tungsten carbide. Production is 75 blocks an hour.

The Foot Burt 2-way oil gallery drilling unit, Fig. 2, is unusual in several respects. The holes are



CHRYSLER has made several new applications of broaching to the cylinder block. The manifold face is finished in a large Cincinnati horizontal broaching machine similar in design to the one used in the new Packard Six line and described on p. 29 of the

Nov. 12, 1936 issue of *THE IRON AGE*. Four sets of inserted semi-finishing blades are used in the broach bar, with full-width tungsten-carbide blades for finishing.

Immediately following this operation, the main bearing cap groove and the crank bearing half circle are broached in a second

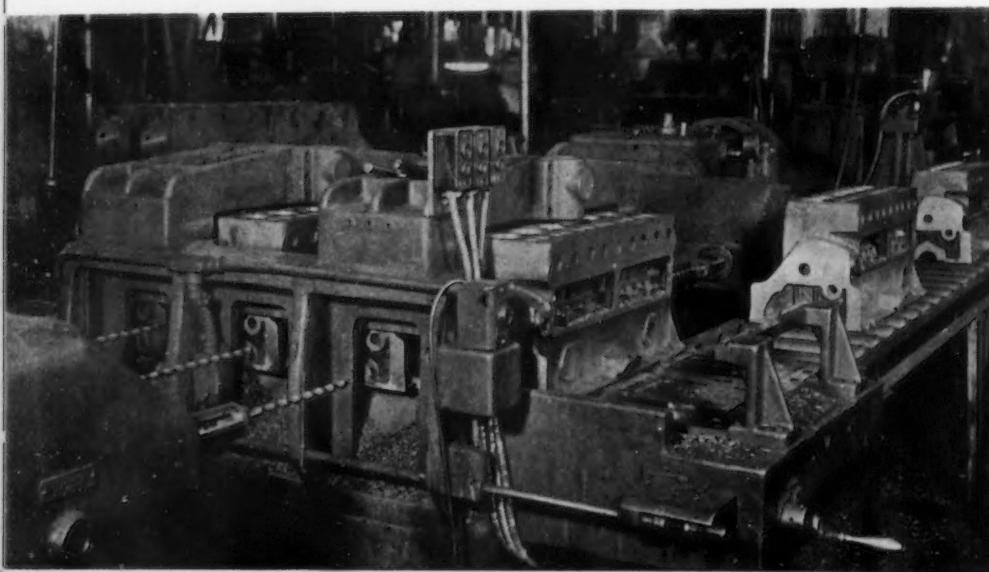


FIG. 2—Drilling of oil gallery holes in three stages is accomplished in this 4-station 2-way machine. Indexing and clamping is effected by hydraulic power.

# Block Line

drilled in steps from both sides in three stations and in the fourth work position a single drill in one head breaks through and crosses over into the hole drilled from the opposite end. Each head has its own hydraulic unit driven by the same motor that drives the spindles, and the indexing fixture, which is also hydraulically actuated, has its own circuit and driving motor.

After placing a cylinder block in the loading station, the operator moves a lever which starts the cycle. All the blocks in the machine are moved sideways one station. At the first work station, pins are raised into two locating holes in the pan rail and the block is clamped in position. There is a set of locating pins at each of the four work stations and they are manually withdrawn by the same lever that actuates the hydraulic pusher bar. This bar contacts each block through two of the main bearings and the pusher plugs are withdrawn when the locating pins are moved in place. Pressing a push button then starts the drilling cycle, each head drilling approximately one-sixth the length of the hole from each side.

The machine is arranged with electrical interlocks to prevent indexing of the hydraulic fixture during the drilling cycle or to prevent the drilling units from coming in while the fixture is being indexed. Cut-out switches are provided, however, to make it possible to run any one of the hydraulic circuits separately, to facilitate setting up the job. Feed of the heads is controlled individually by dogs in the usual way, and the dog rails can

FIG. 1—A pair of motor-driven screw-downs hold the cylinder block firmly in place while the broach bar in the tunnel under the conveyor finishes the bearing cap groove and crank bearing half circle.



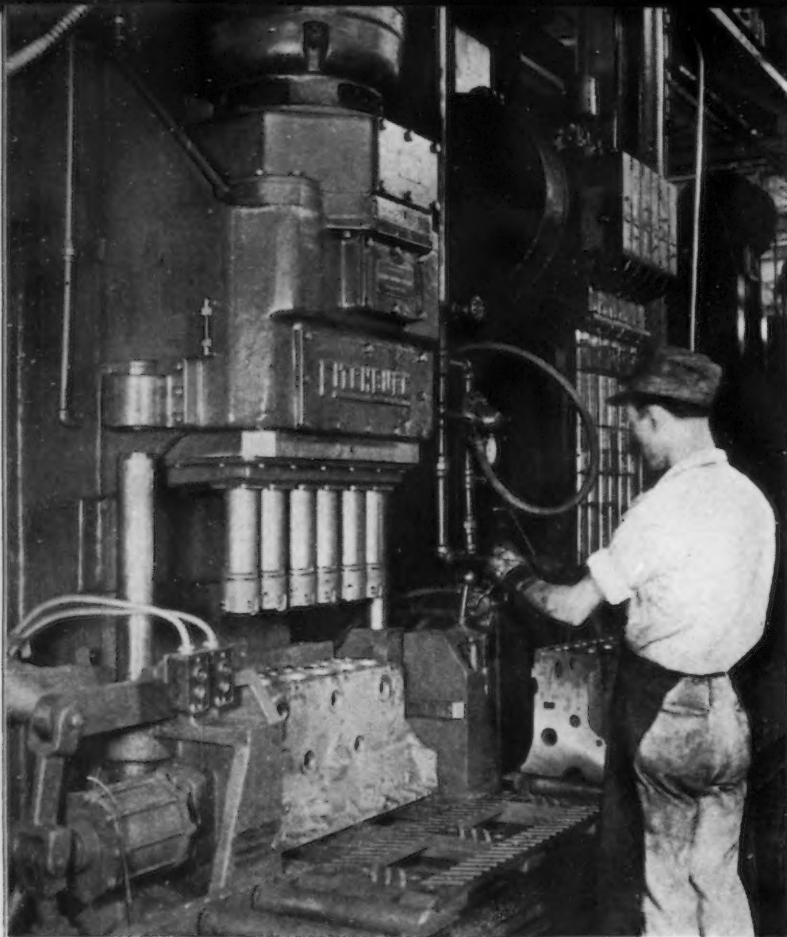
be moved as units to compensate for drill wear.

Another new unit in the line is a Fitchburg 6-spindle machine, Fig. 3, for semi-finish boring the cylinders. This machine as illustrated has a hydraulic head which slides on hardened and ground steel ways, and special provision has been made to provide maintained alignment. In addition to taper shoes on top and bottom of the guides and binders, plus an inside gib, further rigidity is attained by supporting the head on 3-in. guide bars on each side. These guide bars are firmly anchored in the fixture, top and bottom. At the same time, the head is narrow and compact so as to reduce overhang and possible deflection, but the slide is long, with much of it extending below the cutting tools.

The fixture is simple in construction with the block slid over hardened bars. Hand actuated cam movement permits the bars and hence the block to drop over the locating pins in the pan rail. Endwise location is by hardened steel bars against machined faces, and clamping is by vertical pressure applied through air-operated toggles. The air valve and lever for starting the hydraulic head cycle are immediately adjacent.

The Ingersoll precision type 6-spindle boring machine, Fig. 4, for finish boring the cylinder holes, one-third the way further down the line, is another new machine, the latest of its type. Head movement is hydraulically actuated from an Oilgear unit, and the block is clamped by hand eccentrics in a simple box-type fixture. A pair of tungsten-carbide blades are used in each bar together with a pair of dummy blades in a 4-bladed holder. An exhaust hood and duct carries away the cast iron dust since the operation is performed dry. There are two machines with identical set-ups, each producing 32 blocks an hour net.

There are two new Natec center column machines that are the largest units in the line and combine the most operations in a single set-up. Each has a series of unit hydraulic heads mounted on the column as well as heads coming in radially either horizontally or at an angle. Both machines have fixture tables 110 in. in diameter and they weigh 60-65 tons apiece. The tables float on 1½ in. diameter balls and are indexed between stations by a Geneva motion driven through a worm and wheel. A bullet-nosed shot bolt serves as the locking member. Welded steel



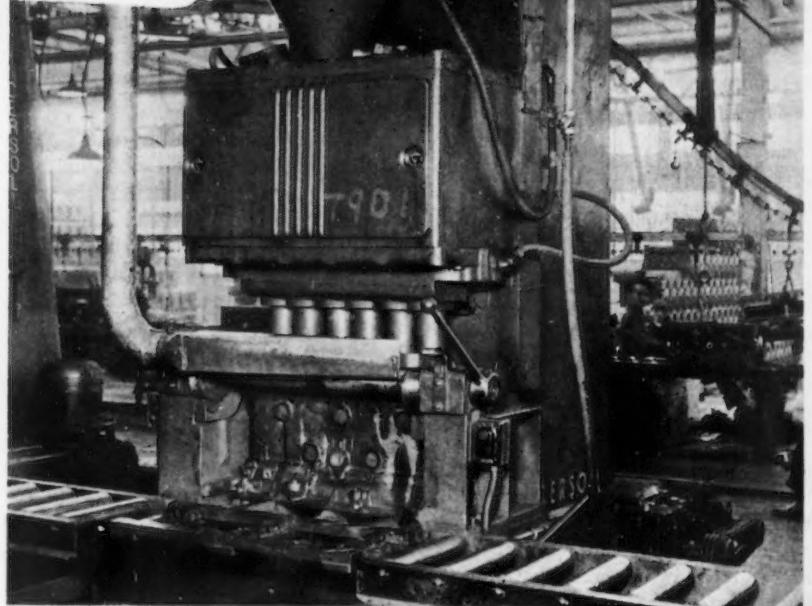
**FIG. 3—Pneumatic toggle clamps hold the block while the bores are semi-finished. Heavy guide bars steady the hydraulic head which incorporates an extremely long slide with taper shoes and gib for maintained alignment.**

• • •

construction makes up the column, main base and side wings. The heads themselves are cast iron and feature standard, interchangeable hydraulic panels.

The first unit is a three-station machine, holding two blocks per station. Two blocks are loaded at a time and there are duplicate set-ups at the two work stations, there being four vertical heads and four horizontal heads. There are 180 spindles in all. Operations consist of drilling valve stem guide and tappet holes, drilling cylinder head stud holes, besides core drilling, spot-facing and counterboring a miscellaneous variety of holes. The block is clamped through a top plate and the vertical bushing plate is piloted over pins. Likewise the horizontal heads carry heavy guide pins which are piloted into the fixture.

In the second Natco center-col-



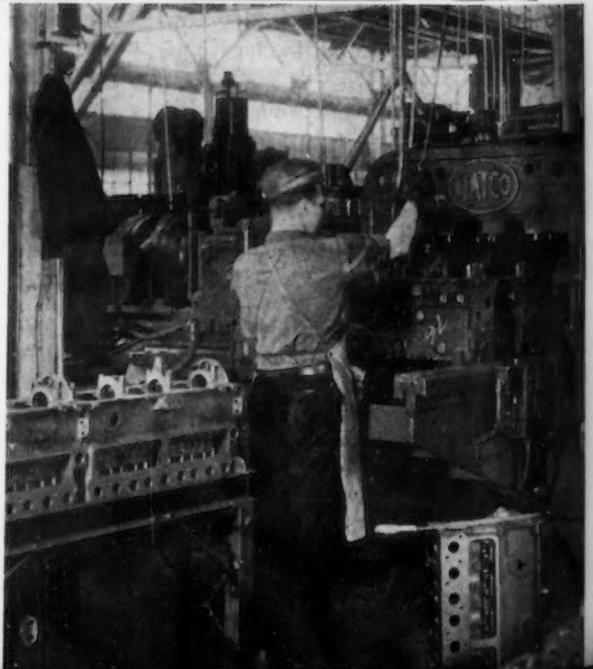
ABOVE

**FIG. 4—As in the example of semi-finishing, tungsten-carbide cutters are employed in this finish boring machine of latest design. Note the exhaust hood for cast iron dust.**

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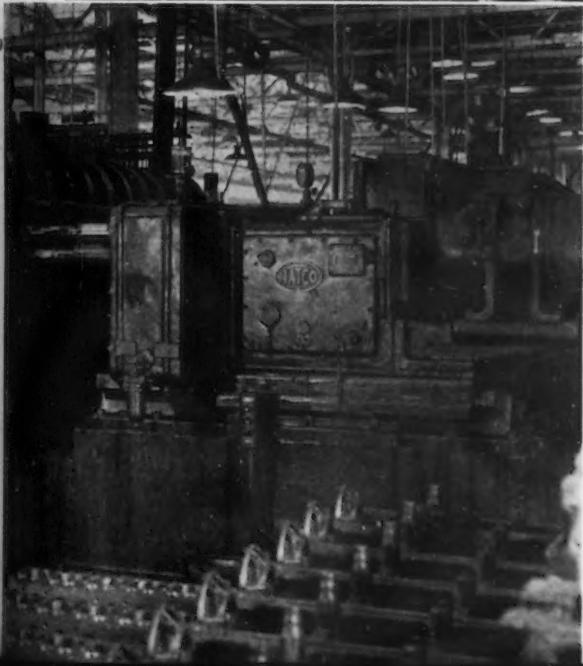
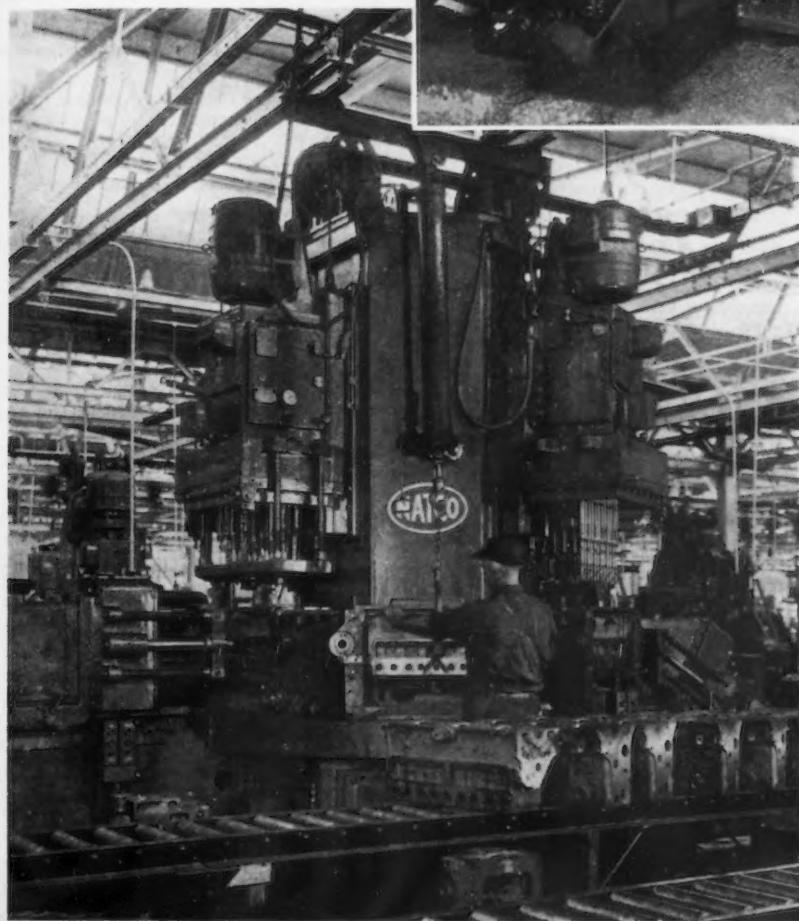
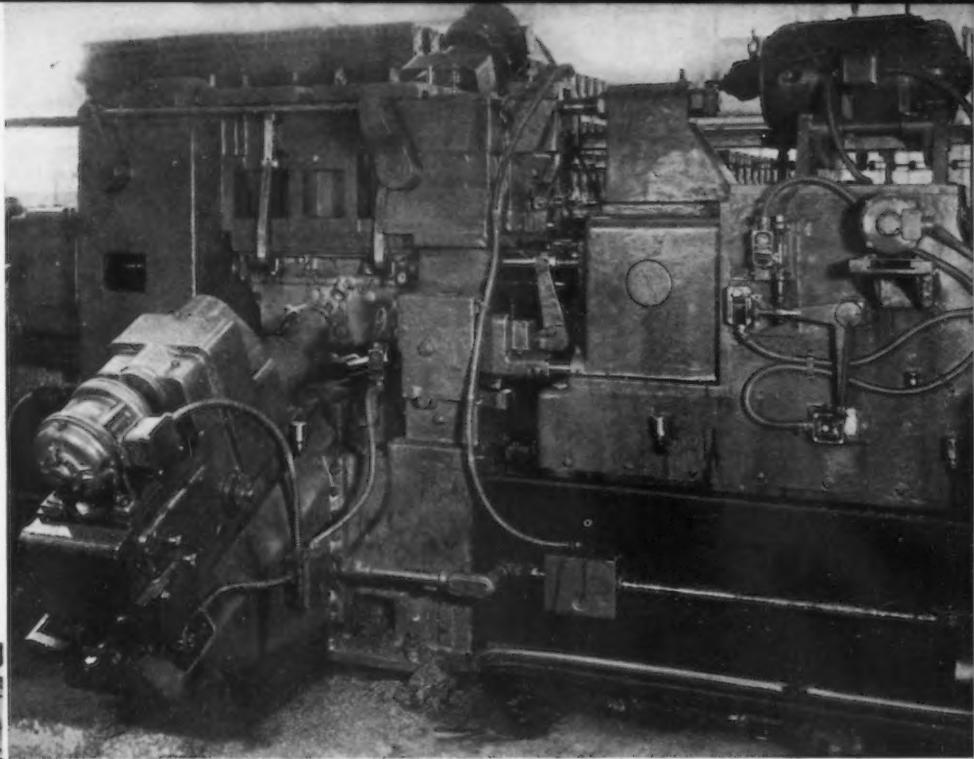
AT RIGHT

**FIG. 6—Cam and crank holes are core drilled and rough and semi-finish bored in this 4-workstation machine. Two blocks are loaded and indexed at a time.**



umn unit, Fig. 5, there are six cycles and six stations, including the single loading station. Operations consist of drilling holes in the bottom and manifold side, as well as miscellaneous core drilling, countersinking and counterboring. In the five vertical and four horizontal heads there are 168 spindles. The block is loaded upside down, pan rail up in a box-type fixture, and is held in position by a cam-type clamp actuated through a hand wrench. Location is by master dowel holes in the pan rail.

As in the first machine, the bushing plates drop down over heavy locating pins and the side guide bars are piloted in jig bushings in the fixture frame. Electrical interlocks prevent indexing of the table before the heads are withdrawn. A blinker light on the column tells the operator that all is clear before he presses the start button for the cycle. It is possible, however, to control the heads independently as required in setting up the job. Handling of the blocks in and out of the machine from the



**ABOVE**  
FIG. 5—One of two center column type multiple drillers. This one has five vertical and four horizontal heads, 168 spindles; weighs 65 tons.

• • •

**F**IG. 7—Business (back) side of special machine for finishing the cam and crankshaft holes. The cam bar on top actuates the mechanism for elevating the work to position No. 1 for inserting the boring bars and clamping it in final position for cutting. Complete electrical interlock is provided.

• • •

roller conveyor is facilitated by a pneumatic hoist suspended from a set of I-beam rollers.

Another NATECO unit that has some unusual features is a multiple head, 2-way machine, Fig. 6, for core drilling, rough and semi-finish boring the cam and crank holes and counterboring Welch plug holes in the front and rear end of the block. Two blocks are worked on at each station, of which there are six, including loading and unloading positions on the horizontal rack bar. Two 20-hp. motors drive the 22 core drilling spindles and a 15-hp. variable-speed motor drives the eight boring bars. A 3-hp. motor drives the rack bar, while a 10-hp. motor powers the hydraulic mechanism for elevating and clamping the blocks at each station. Both the fixture and the bases are of welded steel construction.

Pilot bushings for the boring bars have slots in them to allow passage of the single-point T-C tools. Upon completion of the cut, through special electrical con-

trols on the variable-speed motor, the bars are inched exactly into position for withdrawal. The hydraulic elevators drop the blocks  $\frac{3}{16}$  in. so that the cutters will clear the work. Electrical interlocks prevent withdrawal of the bars if this cycle is not followed. In starting the cut, the reverse procedure is followed. Location of the block is roughly by the rack bar and exactly by rest buttons and dowel pins engaging the pan rail in the clamped position. Output is 69 blocks an hour.

The identical problem of offsetting the tools is met with in finish boring the cam and crank holes as in the roughing operation, but the method of accomplishing it is entirely different in the Greenlee unit, Fig. 7. Here the control is primarily mechanical rather than electrical or hydraulic. Movement of a cam bar on the main boring head elevates the work to preliminary and final positions and controls auxiliary reaming operations as well. From the roller conveyor the block is slid upside down onto a carriage which is hand cranked by an endless drive chain into the position from which it is elevated by power. The block comes to rest against two limit switches which permit automatic cycle control from a single push button.

As the head moves in, the end of the cam bar actuates a pair of bellcranks which through linkage elevate the work platen to the first position. Immediately afterward, pins in the bar pick up two cam plates whose movement forward rock four "ice tong" clamps under the pan rail. At the same time the boring bars are being passed through the cam and crank holes eccentric to them and with cutters down. Slots in the bushings allow the single-point tools to clear. Clamping and movement of the block to the final boring position is accomplished by a pair of wedges which elevate all four clamp pivots through two equalizer bars. The wedges are actuated by a dog on the cam bar that contacts a bell crank and actuator tooth.

At the completion of the cut the tools must be stopped in the correct position for withdrawal through the bushing slots and the block must be dropped to No. 1 position. Spindle location is attained by means of a small auxiliary motor which begins to drive the spindle when the main motor is stopped. It rotates the spindle

## CHRYSLER SIX CYLIN

### OPERATION

Warm block and paint cored surfaces.

Mill top and bottom of block.

Drill and ream 2 locating holes and  $1 \frac{29}{64}$  in. deep oil hole part way.

Countersink above holes.

Straddle mill sides of main bearings.

Rough and semi-finish mill front and rear end of block.

Rough bore cylinder holes.

Broach manifold face.

Broach bearing cap groove and crank bearing half-circle.

Mill generator bosses, distributor and distributor lock screw bosses, clutch housing pan, bracket bosses and oil pressure relief valve boss.

Drill oil gallery hole from each end of block in three stages.

Drill 12 valve stem guide holes, 12 water holes, 4 oil line holes, 2 generator mounting screw holes, 2 clutch housing pan bracket holes. Drill and spot face oil pressure relief valve boss, counterbore 2 Welch plug holes. (2) Drill 12 valve tappet holes and counter-drill valve port holes, core drill oil filler hole, drill 21 cylinder head stud holes. (2a) Core drill and counterbore 5 Welch plug holes, drill water drain hole, combination drill oil pressure relief valve hole, countersink 2 generator screw holes and clutch housing pan bracket screw holes, redrill 4 oil line holes through into cam bearing.

Counterbore underside of valve stem guide holes.

Rough line ream 12-valve stem guide and tappet holes.

Semi-finish line ream valve stem guide and tappet holes.

Semi-finish bore cylinders.

Core drill valve port holes.

Drill holes in bottom and manifold side of block, also oil holes in tappet bosses, including core drilling, countersinking and counterboring.

Chamfer stud holes in top of block; drill both ends; counterbore oil gallery holes.

Finish line ream valve stem guide and tappet holes, one at a time.

Burnish valve stem guide and tappet holes.

Inspect tappet holes.

### MACHINE

Heating tunnel with 3 Venturafin unit heaters, for air spray booth.

2 Newton drum-type millers.

1 Newton rotary table miller.

High-speed steel roughing cutters.

Stellite finishing cutters.

Moline 3-spindle drill.

Thor high-frequency countersinker on flexible arm stand.

2 Newton rise-and-fall millers.

2 Newton drum-type millers; high-speed steel rough cutters and Stellite J-metal semi-finishing blades.

2 Putnam 6-spindle vertical hydraulic boring machines.

1 Fitchburg 6-Spindle vertical hydraulic boring machine.

Cincinnati horizontal Hydro-Broach.

Cincinnati special horizontal broach.

Newton special miller using shell end mills.

Footburt 2-way 4-block drilling machine.

Natco center-column driller, 2 blocks each station, with 4 work stations and 2 loading stations.

Moline 6-spindle drill press with special offset counterboring attachments.

Putnam vertical hydraulic drill press.

Putnam vertical hydraulic drill press.

1 Fitchburg and 1 Moline 6-spindle vertical boring machines equipped with T-C blades.

Putnam 12-spindle vertical hydraulic drill press.

Natco 6-station center column drilling machine.

Greenlee 3-way horizontal drilling machine.

2 Avey single-spindle drill presses.

2 Avey drill presses.

## DER BLOCK LINE

### OPERATION

Rough counterbore for steel insert; semi-finish intake throat diameter and countersink both ends.

Chamfer bottom of cylinder bores and drill angle oil hole in cam bearing.

Tap all holes in bottom and both sides and 5 holes in front.

Tap all holes in top and both ends.

Assemble 12 valve stem guides into cylinder block.

Finish mill top of block.

Drill and tap oil gage hole.

Rough ream holes in valve stem guides.

Finish ream holes in valve stem guides.

Finish counterbore for steel inserts, machine intake valve seat and finish intake throat diameter.

Blow out and assemble valve seats. Peen metal around inserts.

Finish bore cylinder holes.

Mill crankshaft main bearing anchor slots.

Finish ream cylinder bores and chamfer top of bores.

Rough hone cylinder bores.

Finish hone cylinder bores.

Water test, wash and blow off.

Assemble main bearing studs and caps.

Core drill, rough and semi-finish bore crank and cam holes; counterbore Welch plug holes in front and rear end.

Mill oil pump pad and fuel pump pad, clutch housing pan bracket bosses, locating from crank and cam bearings.

Rough mill oil slinger groove and thrust bearing face of No. 4 crank bearing.

Finish mill oil slinger groove and thrust bearing faces of No. 4 crank bearing, and drill angle oil hole in distributor boss.

Finish drill oil holes in cam bearings for anchoring bearing liners and finish ream relief valve hole.

Finish mill front and rear end of block, locating from crank bearings.

Machine oil pump and distributor holes, including drilling, counterboring, spot-facing, tapping and semi-finish reaming.

Finish bore crank and cam bearings and finish bore oil pump and distributor hole; ream dowel holes in rear end.

Hand ream No. 4 cam bearing hole.

Grind intake valve seats and grind exhaust valve seats.

Assemble cam bearing liners.

### MACHINE

Greenlee 2-way drilling machine with Putnam column mounted in back for counterboring.

Moline 6-spindle drill press.

Greenlee 3-way horizontal tapping machine.

Greenlee 3-way horizontal tapping machine. 20-ton General flexible press.

Newton rotary miller employing high-speed steel inserted blades.

Avey 2-spindle drill press with hand feed.

Moline 12-spindle hydraulic reaming machine.

Moline 12-spindle hydraulic reaming machine.

Moline 12-spindle drill press.

Hand operations on conveyor.

2 Ingersoll vertical hydraulic boring machines using T-C blades.

Putnam vertical hydraulic driller with special milling head.

2 Footburnt 4-spindle reaming machines.

2 Barnes 6-spindle honing machines with Micromatic hones.

2 Barnes 6-spindle honing machines with Micromatic hones.

Special water test fixture in conveyor line.

Thor Hicycle stud driver and Ingersoll-Rand air motor nut setter.

Natco 5-station special boring machine indexing 2 blocks at a time.

Putnam special horizontal miller.

2 Cincinnati eccentric head millers.

2 Cincinnati eccentric head millers with L & G gooseneck for angle drill.

Footburnt one-way horizontal drill.

1 Cincinnati duplex mill (1 fixture).

1 Fitchburg duplex mill (2 fixtures).

Nateo 2-way drum-type driller.

Greenlee special 4-way boring and reaming machine.

Thor Hicycle motor.

Thor Hicycle motor.

Oilgear horizontal press.

until a pawl drops into a slot in the spindle. This pawl is withdrawn when the tools are again brought into the cutting position. Dropping of the block is effected through the movement of a pair of toothed cams which are integral with the first-named clamping wedges. An adjustable plunger on the head actuates these cams, which are reset upon withdrawal of the top cam bar.

During this main boring cycle, it is necessary to ream a pair of holes in both front and rear end of the block and to get the reamers out before the block is dropped to clear the main boring bar cutters. By mounting the reamers on a quill it is possible to withdraw them through a cam and bell crank engaging a collar while the boring head is still advancing.

Location of the block is by dowel pins engaging the pan rail and also by the front face in order to assure locational accuracy for the oil pump and distributor shaft holes which are precision bored at the same time. Hence a slight end-wise movement is allowed the dowel plate so that a trigger cam, also actuated by the top cam bar, can push the block against an adjustable plug, bearing against the front face.

In between these rough and finishing operations on the cam and crank holes just described there are a number of other interesting operations on several new machines. In milling the oil pump and fuel pump pads in a reconverted Putnam miller, for example, the cylinder block is located on four plugs, two at each end, engaging the cam and crank holes. Air cylinders actuate the plugs. Both the oil pump and the fuel pump are driven off the cam-shaft and this set-up assures the proper planar relationship to the axis of the cam-shaft. Similarly, when both ends of the block are squared up with the crankshaft bore in a pair of Cincinnati and Fitchburg duplex millers, rack operated plugs engage the crank bores, making them the axis of alignment.

Finally, when the oil pump and distributor holes are machined in a huge Nateo drum-type driller, Fig. 8, the block is located by plugs in the camshaft holes. As can be seen in the illustration, which shows the loading position, the block is dropped in the fixture in

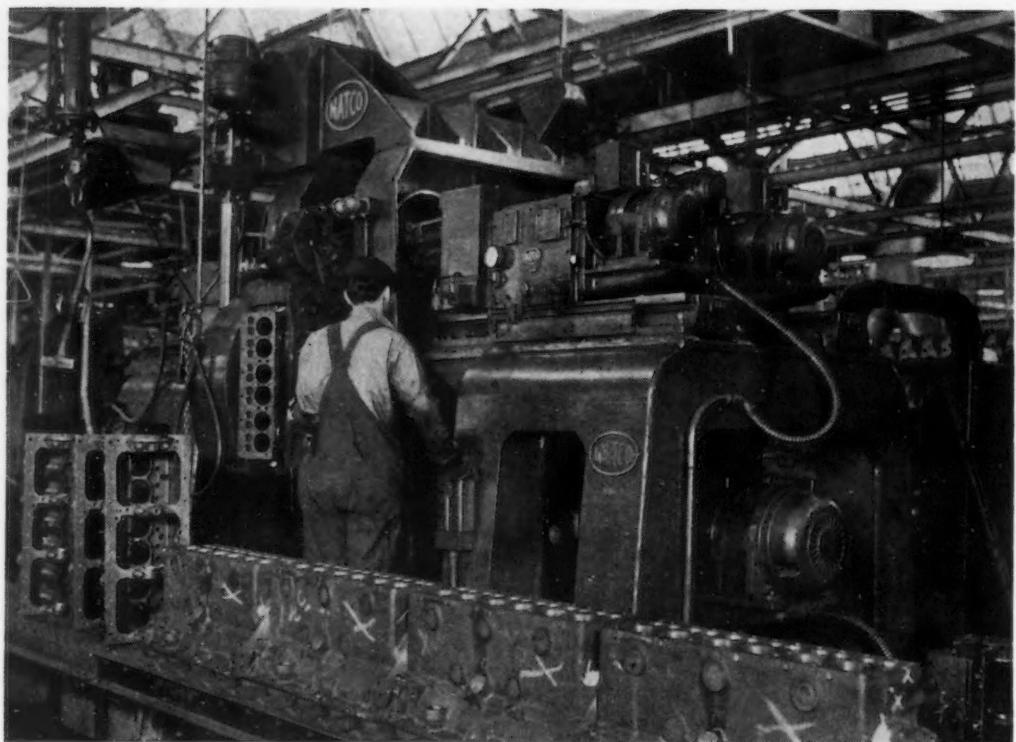


FIG. 8—There are three work heads on each side of the large drum-type fixture in this machine for finishing the oil pump and distributor holes. The block is located on plugs engaging the semi-finished camshaft holes.

a vertical position. By means of a hand crank and rack motion, the operator elevates a plug which engages the lower camshaft bore. An air hoist on a monorail facilitates this operation. The machine has four work stations, plus the loading one. Altogether there are six

heads for drilling, counterboring, spot-facing and reaming, all hydraulically controlled, besides two tapping heads with individual lead screws. The drilling heads are driven by six 5-hp. motors and the two tappers through a single 3-hp. motor. Another 3-hp. motor drives

the Geneva indexing mechanism for the drum-type fixture.

As in other Natco units, welded steel construction is employed for the base and trunnion uprights as well as the connecting bridge between them. Output is 68 blocks an hour.

## New Japanese Acid Resisting Alloy

**TOKIO (Special Correspondence).**—An alloy steel highly resistant to hydrochloric acid is reported to have been invented by Dr. Endo of the Research Institute for Metals, Tohoku Imperial University, who has been studying acid-resisting alloys with the assistance of A. Itagaki, of the institute's staff. The metal contains molybdenum, chromium and nickel. The results of the study will be reported to scientific institutions.

Several kinds of the steel are made and, according to composition, are designated as Nemicle F, Nemicle C, Nemicle and Necomicle. The inventor states that Hastelloy,

invented by Mr. Field of the United States, is only resistant to a maximum 10 per cent hydrochloric acid, whereas Nemicle F not only withstands corrosion in the same concentration, but is practically unaffected by hydrochloric acid of 30 per cent concentration. Moreover, it is not attacked by a solution of ferric chloride, sulphuric acid, and nitric acid, a solution of mercuric chloride, or a solution of common salt. Its elongation is high, and its price is about one-half that of Hastelloy. The metal is expected to prove a valuable contribution to the chemical industries.

The other three alloys have much

more resistance to acids, being unaffected by both 10 and 30 per cent hydrochloric acid and offering considerable resistance to the 20 per cent solution of the acid which attacks Nemicle F. Even where ionized iron exists, there is perfect formation of a passive protective film. The three metals are about the same in price as Hastelloy and are suitable for turbine blading and wire, and as materials for all kinds of equipment in the chemical industries.

Further investigation is being made to develop an alloy with perfect resistance to 20 per cent hydrochloric acid.



IT'S the high water mark at which the young lady is pointing—high water at the General Electric building in Cincinnati. Luckily she was not there when it happened, for the odds are that she could not swim in that fur coat.

## When Neptune Battles With Jupiter

WHEN the god of water engages the god of thunderbolts, mankind has to repair the damage. And here are some of the steps taken by the mortal members of the G.E. Co. in Cincinnati to counteract what water has done to electricity.



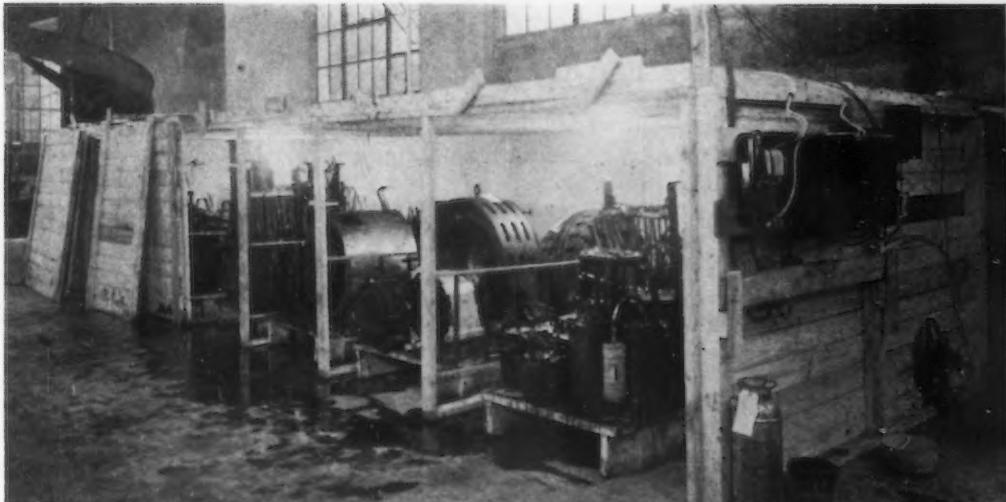
DELUGED transformers come in for their share of attention. Here are some of them in the Cincinnati G.E. service shop.



• • •  
CONTROL apparatus cannot swim either. And it cannot be resuscitated by rolling it over a barrel. The life saving crew are seated at these benches.  
• • •

VULCAN, god of heat, comes into the picture too. Here he is at work, drying out electrical apparatus at a temperature of 110 deg. C. in temporary ovens.

• • •





## No Skilled Workers!



A PROMINENT manufacturer was recently talking of the scarcity of skilled workers. He came from an industrial community noted for the production of machinery and automotive parts. It was a subject that had been one of wide discussion among industrialists there, and in spite of reputedly high wages—offers of \$1.25 an hour—few mechanics were forthcoming.

Various explanations had been given by the manufacturers for this condition of affairs: Limiting of apprentices by the trade unions and by employers during the depression, dying off of the old mechanics, and lack of capacity of the modern specialists. The universal correction for the condition,

By GEORGE STUART BRADY  
*Technical Adviser to Coordinator for Industrial Cooperation*

according to the industrial leaders, seemed to be to take a firm hand and put more apprentices into the shops.

The conversation with this manufacturer recalled vividly to my mind a talk some months before with another type of man. It was at a small roadside lunchroom. The owner and his wife worked in the tiny short-order kitchen and waited on customers. They lived in a little house on a hill above the automobile road. The conversation revealed that he had been a first-

class tool and die maker in a big factory. At peak periods he had worked 56 to 60 hours a week and made "big pay"—that is, big for a toolmaker as it was reckoned in that industrial center, up to \$70 a week. At slack periods the shop operated on short time and his wages sometimes dropped to as low as \$30 a week. When the depression came, this man was one of the top-notchers and did not lose his job, but his wages for more than two years averaged far below \$20 a week. Then he lost his job.

"Never again!" he was telling me, as I sat watching his flock of white hens pecking on the hill. "A man's a fool to put in a four-years' apprenticeship, study his head off, and sell his life for a laborer's pay

without any assurance of a job next year or next month.

#### What's the Use?

"Why, do you know how many years it took me to get to be an expert toolmaker capable of making automobile dies?" he continued. "A fellow only begins to be a real mechanic in 10 years, and he's lucky if he gets 75c. an hour after he serves a four-year apprenticeship."

"I'm an A-1 mechanic, but they'll never get me into a shop again," he continued, after I had gotten from him that his soldier's bonus loan in 1932 had set him up in this little roadhouse where he enjoyed economic freedom and good living conditions for his family, although he probably averaged less money than he had earned as an expert toolmaker.

With thoughts of these incidents in mind, I asked a chief of one of the great craft labor unions why he sent his son to college instead of placing him in an apprenticeship to learn a trade. I had not expected the frankness of the answer.

"I didn't want him to have to go through what I went through," he replied. "Ninety cents an hour is the best he could get as a mechanic in this section, and anybody can earn that much at a clerical job."

This was the statement of a man who was devoting his whole life earnestly to the advancement of craftsmen. But there was something else he didn't mention. But I knew, because once as a teacher of "machine shop practice" I had been close to this thing. It was the fact that when a boy attends high school, he begins to feel above the social caste of present-day mechanics. The girls he meets at dances do not want to marry mechanics, even though their own fathers were workmen. Not that they think that there is anything debasing in mechanical work, but because they want to live in a modern house on a nice street.

#### The "White Collar" Company

Anyone can perform a little sociological experiment by merely questioning the high school boys of the neighborhood. And it is interesting to note the development of the change from the young freshman, who still acknowledges his preference for mechanics, to

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**T**HIS year 1937 will probably be marked in future history as the crucial year in employer-employee relations. Never before has there been a marshalling on as large a scale of controversial views and opinions on collective bargaining, representation, wages, hours, unionization, employee participation in management, etc.

How these matters are settled, or unsettled, in 1937 will determine the future of industry and of employment for many years to come. They cannot be settled properly in a spirit of antagonism on either side, nor by dodging issues, nor by refusing to face facts.

Neither management nor labor can afford to take a position in any of these matters without first hearing the other fellow's story. We know our readers will be interested, therefore, in this article by Colonel Brady, assistant to Major Berry. It deals with some of the "whys" of the skilled labor shortage.

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the sophisticated senior who has fought in his own mind the battle of choosing his profession. At first reluctantly, then with forceful emotion, the high school boy rejects the idea of going to work in a shop. He joins the great army of the "white collar class," which, today, numbers a large part of our unemployed. In the meantime, our factories are limping along with the greatest scarcity of skilled workers since the World War. The fundamental difficulty is not with the apprentice courses, but rather with what is offered to the graduate after taking the course.

In one typical plant apprenticeship course, where only high school graduates are employed, and where regular classroom instruction is given in addition to the progressively graded shop work, the pay of the apprentices is raised progressively from \$12 to \$25 a week. The average age of boys on graduation is about 22. Considering the factory expense of maintaining such an apprenticeship course the payment appears certainly liberal,

and in that city is ample to provide a good living for the boy during the apprenticeship. It is actually slightly higher than the "sample" suggested by the U. S. Department of Labor. The course represents a tremendous advance both in payment and in the quality of the training from the courses offered before the War, where the apprentice boy received \$3 or \$4 a week, with desultory shop training by mechanics often not fitted for teaching.

We are living in the much-heralded "Machine Age," but if our son is mechanically inclined, loves to make things with his own hands, and has that artistic eye and finger touch so necessary in a skilled artisan, do we send him to a trade school or apprentice him in one of our great industrial plants? No, we do not! Not unless we are too poor to do otherwise! For the very simple reason that we do not want him to tie himself for life to a 90c. an hour wage dependent upon the ups-and-downs of factory employment.

If the mechanically-inclined boy can squeeze out enough money to go to college, he gives expression to his desires to be a mechanic by aiming to be an "engineer." And since an engineer in the mind's eye of the average college student is a man who sits at a desk in the front office and tells the factory how to make things, thousands of these boys after graduation never have more than casual employment because they have no native ability for executive work.

During the depression there was much talk of the "excessive wages" in the building trades, especially in New York, where living costs are high and wages are usually high. The scale agreed upon in 1932 for New York City placed top wage for carpenters, steel workers, masons, and other "journeymen" mechanics at \$1.40 an hour.

#### "Big Wages"

A wage of \$1.40 an hour sounds big. But maximum employment in the building trades is only for 44 weeks in the year at 40 hr. a week. This makes a top yearly wage of \$2,464 for skilled mechanics—men who have served an apprenticeship, who must have a certain amount of genius for the trade, and who have devoted years to perfection of the work of the trade.

It is a peak point to which the skilled craftsman can advance. This \$2,464 per year, in a city where living costs are close to the highest in the nation, practically corresponds to what a college boy expects after a year or two out of college, and is about the scale paid to the bottom rung in a brokerage office. It definitely limits the social scale of the journeyman mechanic. To raise his income he has to leave his chosen mechanical work. Perhaps he takes a job as foreman, though he may not like it or be suited to it. The result is that by elevating him to the job of foreman the company has lost a good mechanic and made only an incompetent white-collar worker. What is needed is to raise the position of the skilled craftsman itself to a higher plane.

In the Detroit area, the residence of the workers of the manufacturing industry which is reputed to pay the highest average wage, and where we would normally look for a realization of the development of the "theory of plenty," we find the average annual wage of skilled workers little over \$1,200 (the annual minimum wage of Federal junior clerks is \$1,440 plus a month's vacation and 15 days' sick leave). And we find living conditions in this part of the country such that a worker with a family cannot find a home for less than \$50 a month except in the slums or near-slums. In calculating what a worker should have in income, it should not be beyond reason to say that the head of a family should normally receive sufficient to buy housing facilities, clothing, and food for five persons, and have enough money left to pay doctors' and dentists' bills and to purchase some of the products of the age, such as radio, washing machine, or automobile. Actual field studies in selected industrial areas, published by the Department of Labor, show, however, that in spite of the fact that in the average worker's family more than one member is a wage earner, 75 per cent of the total family wage goes for bare living expenses, and that often medical attention eats up a large part of the remainder.

As far back as the time of Adam Smith, it was recognized that "the labor of an able-bodied slave is computed to be worth double his maintenance, and that of the meanest laborer cannot be worth less

than that of an able-bodied slave." But actually we see under the best conditions the skilled worker paying one-half of his annual wage merely for an unfurnished "flat" in a subnormal residential area. Is it any wonder that, as the United States Department of Labor reports, a large proportion of skilled workers in that most favorable area are obliged to supplement their wages by "secondary employment," thus overworking themselves and depriving others of employment?

#### Technological Displacement

The head of one of the great industrial research laboratories told the annual Convention of the United States Chamber of Commerce last year that technological displacement is a myth. He said that the advance of new industries fully compensates for the loss of the old. And he mentioned as an example the displacement of the old carriage industry by the automobile industry with its attendant new work in road building, gasoline stations, and garages. This is admittedly true; the advance is there, and the new jobs are eventually there. But what became of the expert electroplater when the automotive industry in one single year abandoned plated metal radiators and parts and adopted stainless steels that require no plating? Or what became of the expert sand molders when much of the hardware ceased to be made in the foundry but was turned out in automatic die casting machines in permanent metal dies?

These men and others like them in many trades, the victims of "technological unemployment," lose their jobs, and their plight is worse than that of the unskilled worker. There are months of family heartaches until they are readjusted in the industrial system. To the skilled craftsman this is a serious condition, for his wage scale does not permit him to be "ahead of the game" like the salaried executive and have a reserve fund to tide over the unemployment period or help him to move to another industrial locality.

These are the real reasons why the youths we are training to think in our high schools refuse to go into the factories unless they are driven there by poverty or unless they take the course as a stepping stone to the position of

foreman. It is becoming more apparent every day that a high school knowledge of mathematics and elementary science is a necessary requirement for the expert trades, but even those factories that have recognized this and take only high school boys into their training courses are aware that the boys will not stay in the trades. One of the largest plant schools in the New York area, which takes only high school graduates, calculates that half of its apprentice graduates look immediately for jobs outside the trades. Even the Federal Committee on Apprentice Training admits that the apprenticeship courses are training men for foremen and department heads rather than for skilled workmen.

#### Skilled Differentials

Intimate study does not reveal that existing wages of skilled craftsmen, who have served apprenticeships and have also a genius for fine work, are proportionately higher than the wages of common labor. Average wages of skilled journeymen mechanics in 70 cities of the United States in 1936 were only 54 per cent higher than the average for common laborers. There are definite elements that enter into the make-up of every job, whether it be common labor or skilled toolmaking, namely, artistic genius, skill, monotony, fatigue, health injury, education required, necessary apprenticeship, social undesirability, etc. These elements can be evaluated and the relative wage bracket for each type of craft or job can be ascertained. A study of this kind was made as a test in a factory of 3500 employees, and it was found that on a purely scientific wage-scale rating the skilled craftsmen should actually be paid higher salaries than the foremen.

The skilled craftsman is the key man in the human mechanism that keeps our modern intricate industrial life going efficiently, and the greater the proportion of specialists and machine operators in the increasingly integrated industry the more important becomes the skilled craftsman. Our modern mass production system should have raised the status of the craftsman, and by this time we should have been in a position to evaluate his worth methodically and scientifically.

Much has been written about

the shortage of skilled craftsmen, and much has been done since 1933 to reopen courses that were closed during the depression, and to initiate others. The Federal Committee on Apprentice Training and the President's Committee on Vocational Training have brought the national government to the aid of State and local authorities. But unless there is a cooperative effort to re-elevate the position of

the craftsman and see that the skilled worker receives a real annual compensation that will enable him to occupy a place of dignity in his community, this concentration on the training itself cannot bear fruit. The real incentive for the prospective mechanic must be not in the training course but in the final opportunity in the job as an attractive life work. Until that condition exists

the brighter youths will not be attracted into the trades. The realization of this ideal is not merely a task for the individual manufacturer. Our industrial system has gradually tended to remove the journeyman mechanic from the honored place he once held, and the whole process must be checked and reversed. It is a job for all industry to recognize and do cooperatively.

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## RAW MATERIAL

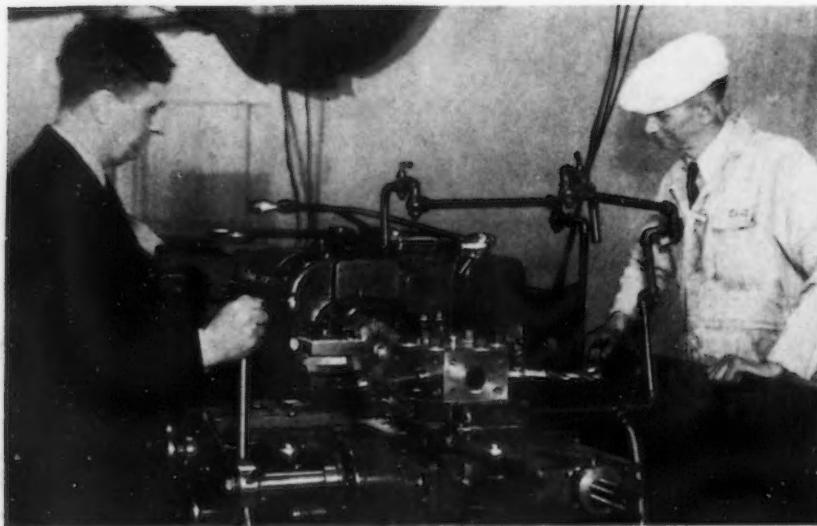
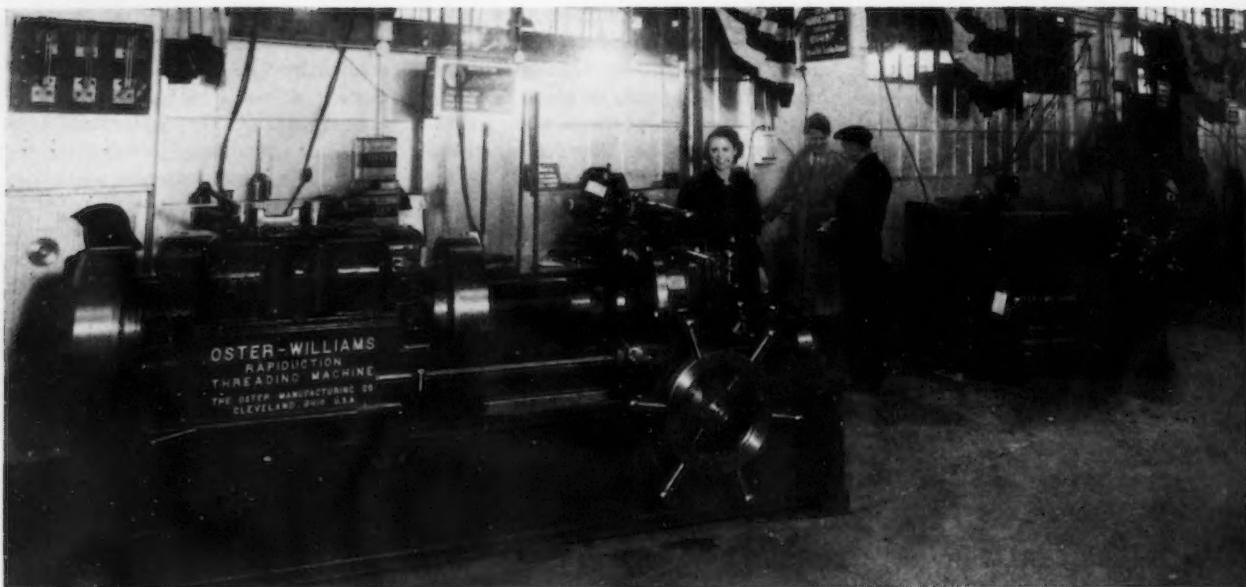
**Y**OU can transform a pound of steel into a casting worth perhaps six cents, or into a quantity of watch springs valued at \$10,000. What you do to the raw material determines its ultimate value.

There is a thought in this for us with regard to our most important material of industry—labor. What we do to it; and with it, determines its worth.

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*Photo by Van Fisher, Cleveland.*

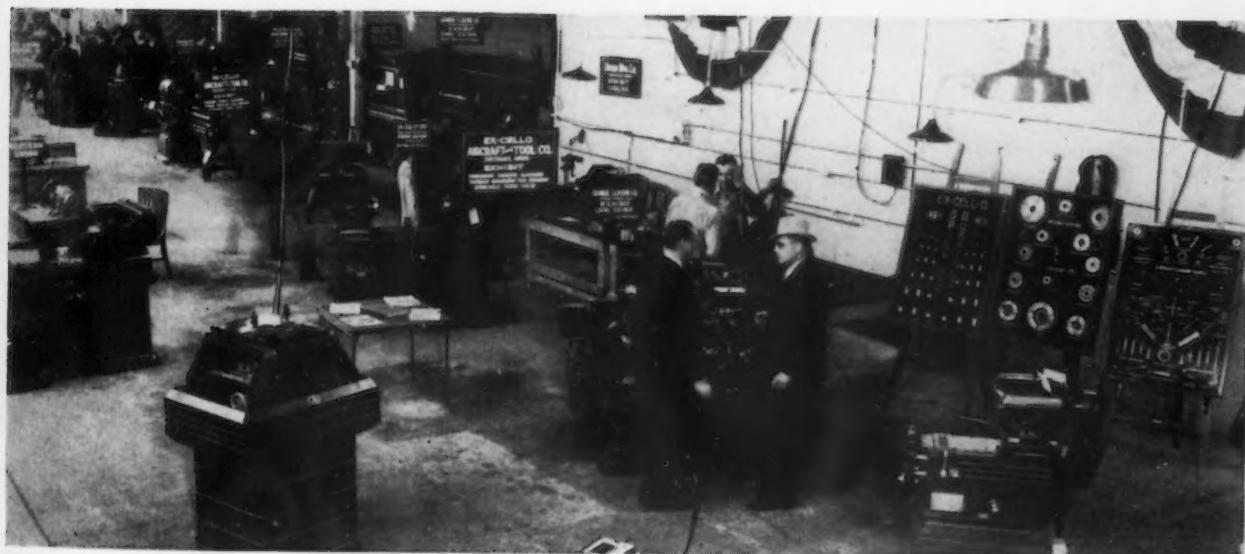


THE largest machine tool exhibit yet attempted on the Pacific Coast has just been conducted by the Herberts Machinery Co. of Los Angeles.

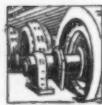
The attendance was over 14,500 during the week. Among the companies represented were: Allsteel Press Co., Chicago; American Broach & Machine Co., Ann Arbor, Mich.; American Tool Works Co., Cincinnati; Acme Electric Welder Co., Los Angeles; Bardons & Oliver Co., Cleveland; Bryant Chucking Grinder Co., Springfield, Vt.; Ex-Cell-O Aircraft & Tool Corp., Detroit; Hydraulic



Press Mfg. Co., Mt. Gilead, Ohio; International Machine Tool Co., Indianapolis; Oster-Williams Co., Cleveland; Racine Machine & Tool Co., Racine, Wis.; George Scheer Co., New York (Zeiss Measuring Instruments); Sunstrand Machine Tool Co., Rockford, Ill.; Van Norman Machine Tool Co., Springfield, Mass.; Whitney Metal Tool Co., Rockford, Ill.; Rockford Machine Tool Co., Rockford, Ill.; Reed Prentice Corp., New York; Niagara Machine & Tool Works, Buffalo; Baker Bros., Toledo, Ohio, and Oliver Instrument Co., Adrian, Mich.



# *Educating the Buyer of Power*



WITH half a billion dollars being wasted annually in the United States, delivering power to the machines of industry inefficiently, and with upwards of 70 per cent of those machines still being driven by the old-fashioned lineshaft drive methods which our great-grandfathers and their fathers before them devised, it would be natural to assume that some effort is being made to show the industrial plant executive how to

use power more effectively and more economically in his plant. As a matter of fact, there are three efforts being made; but as yet, because of the differing aims of the groups making these efforts, no united, coordinated action has been visualized, in spite of the fact that such an effort to defeat the common enemy would bring excellent results to all three groups.

Each of these three groups has an axe to grind. The motor manu-

facturers want to sell more motors, the public utilities want to sell more electricity, and the manufacturers of mechanical power transmission equipment want to sell more mechanical power transmission equipment. Yet these aims are not really conflicting, and a concerted effort by all three groups to educate the industrial plant executive who uses power to drive his machines would have far-reaching effects now in saving the bulk of that half-billion-dollar drag on present-day production costs.

It is to the credit of the electrical industry as a whole that it was the first to see and to appreciate what an educational campaign could do not only to benefit the user of transmission equipment, but equally the manufacturer of electrical equipment. For some twenty years or more, and at a cost of many millions of dollars, the electrical industry has preached the economy and efficiency of individual motor drive. In the main this campaign to motorize industry has been sound. It has not only cut production costs, it has improved safety conditions and promoted better lighting conditions in the plant. And it has fostered, through the general cleanliness of individual motor drive installations a genuine pride in plant appearance which tends to be reflected in better work on the part of the employee. It is only necessary to compare the appearance of an average plant operated by old-fashioned lineshaft drive methods with another plant where individual motor drive is the rule to see the difference. But it is not only in outward appearance that improvements have been effected; the changes in the balance sheets reflecting operating costs have been just as startling. Individual motor drive is beyond any question

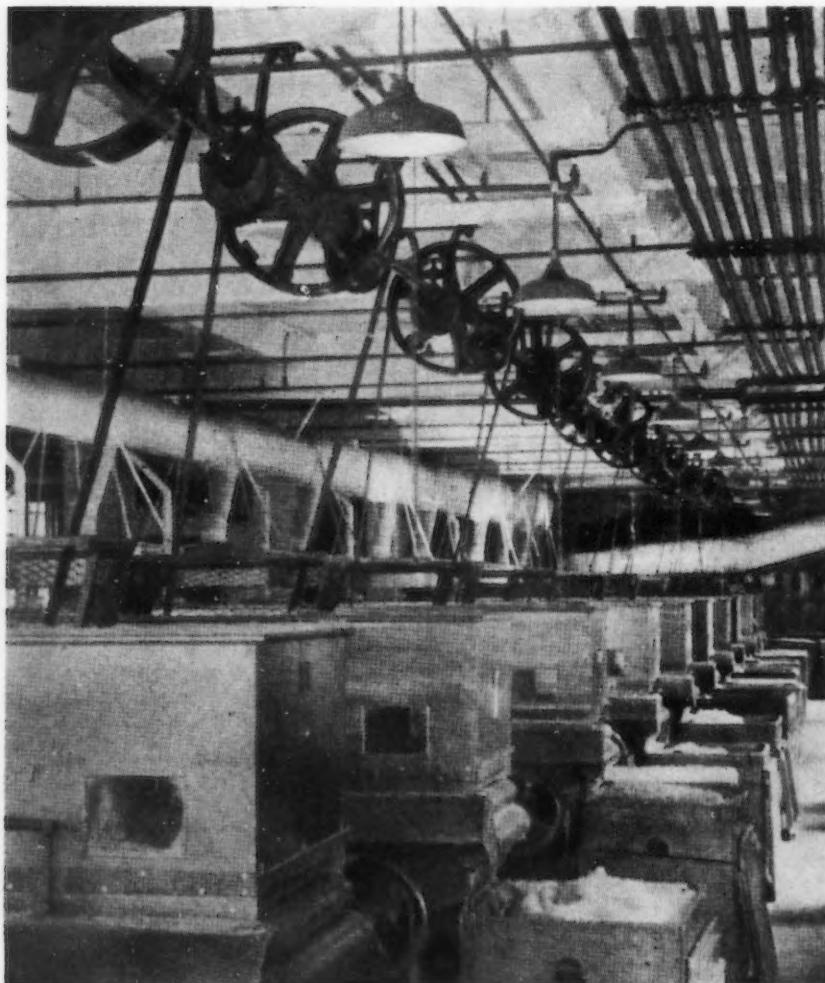


FIG. 1—Typical long lineshaft drive in a large hat factory. Although equipped with modern bearing hangers, this does not conform to production flow principles.

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# Transmission Equipment

By FRANCIS JURASCHEK  
Consulting Editor, *The Iron Age*

more efficient and more economical, as a whole, than old-fashioned lineshaft drive.

## An Effective Campaign

The efforts of the electrical industry designed to motorize industry have been smartly conceived and brilliantly executed. Constant research and cooperation with manufacturers of machines have resulted in the design and construction of motors remarkably well adapted to drive those machines. Sustained publicity effort both in the editorial and the advertising pages of industrial publications has sought to drive home to the user of these machines that individual motor drive is the modern, efficient and economical method of driving the machines of industry. And the men whose job it has been to sell electrical equipment have been well-trained in the problems of proving to the buyer the economy and efficiency of motor drives. No bet has been

overlooked anywhere along the line which could reasonably be expected to help sell motors to industry.

The result has been that the younger engineers in industry are quite thoroughly imbued with the idea of individual motor drive, and at every opportunity, in season and out, press the "modernization" of machine drives along this line. In doing so, they have at times forgotten many of the natural limitations of the system, and have consequently designed, recommended and installed many individual motor drive systems which, while manifestly superior to the old-fashioned lineshaft drive systems they displaced, are nevertheless far from being as efficient and economical as they might be.

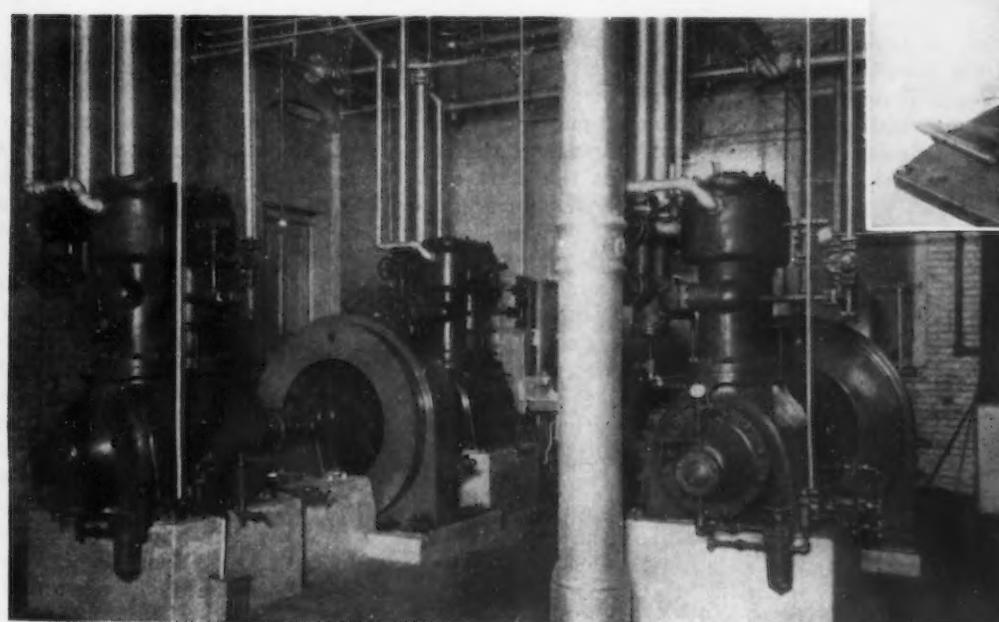
It is the second group referred to above that has mainly brought to light the inefficiency and uneconomy of many of these unit drive systems. For, although the

public utility is essentially a part of the electrical industry, its function is not to manufacture and sell electrical equipment, but to manufacture and sell electricity.



ABOVE

FIG. 2—A special tool individually motor driven, designed to tighten two nuts simultaneously. A Stearns magnetic clutch releases the drive when a pre-determined tension is reached.



And wherever the electrical equipment in an industrial plant uses the electricity furnished to it by a utility inefficiently and wastefully, it costs the utility money. This fact was not recognized in the early days of the utilities. Then, the sole aim of the central station was to build the load, and the engineers of the utility, if called upon to recommend improvements in drive systems to the industrial executive, advised him to use individual motor drive exclusively. The result has been, as they have found to their sorrow in many instances, that hundreds, even thousands, of industrial plants purchasing power from utilities are operating at low power factor.

Low power factor operation not only ties up many dollars of the utility's money in heavy distribution lines and in transformers, but it also limits the most effective use of the generating capacity. It has come to the point with many utilities today where not more than 60 per cent to 70 per cent of actual generating capacity in the central station is actually used because of the large number of low power factor plants on the line. The imposition of power factor penalties does not compensate for this loss of possible revenue, and the utilities have finally come to see that the education of the user of power in improved methods of applying the power to their machines will put more net operating revenue in the central station pockets than imposing power factor penalties, no matter how severe.

As a consequence another army of educators are applying educational methods to the industrial executive—this time not to induce him to buy more motors, but to show him how to use what he already owns more usefully. In the hands of the power engineers of the public utilities the edu-

cation of the user of electrical equipment has tended more and more to the point of investigations of the possibilities inherent in the logical grouping of machines into production units.

Finally, the manufacturers of mechanical power transmission equipment, particularly belting, shafting and pulleys, began to see their markets slipping away from them in the rush to motorize industry. They effected a voluntary, cooperative organization, and on

industrial power transmission, and in particular were taught the basic arguments pertaining to the modern group drive method. Later, when these clubs were functioning reasonably well, a sustained and intelligently worked out campaign of advertising and editorial publicity directed at the industrial executive was launched to supplement the direct educational efforts of the salesmen in the field.

It may be seen that the primary purpose of this group is to sell

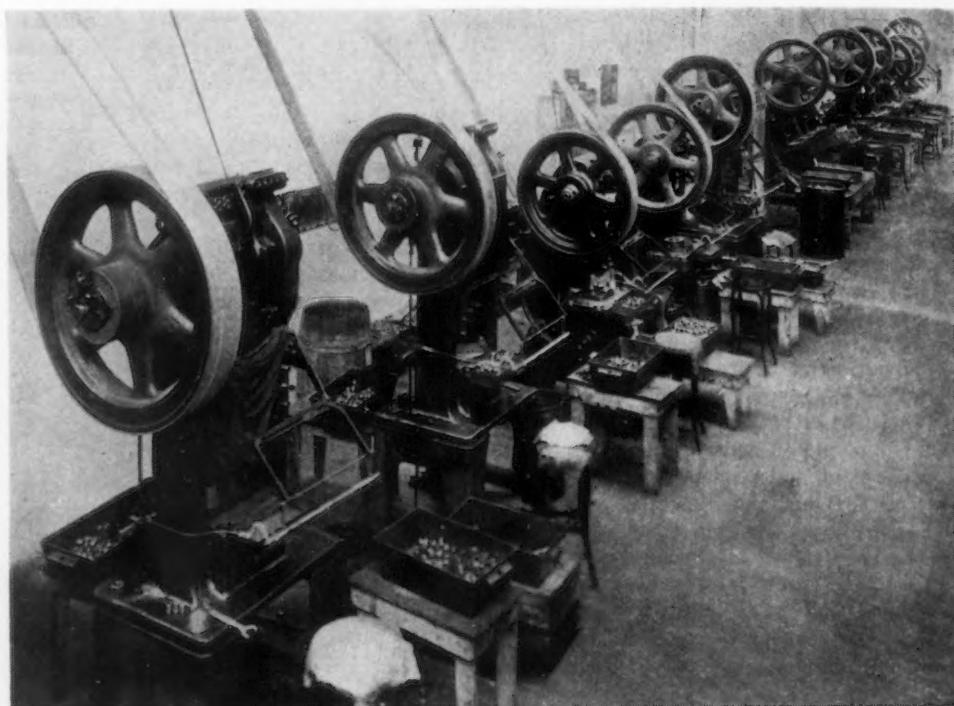


FIG. 4—A line of punch presses arranged in two groups, stamping out parts for electric light fixtures. An ideal set-up for modern group drive methods.

the basis of certain field investigations made in the form of case studies of typical American manufacturing plants, put into effect an educational campaign of their own. Realizing at the start that the average salesman of mechanical power transmission equipment knew practically nothing about the economics of machine drives, the first effort of this association was devoted to organizing some 3000 equipment salesmen (together with such utility power engineer and mechanical engineering consultants as could be induced to join the movement) into Power Transmission Clubs in the principal industrial centers of the country. At meetings of these clubs the members studied and discussed many of the fundamental problems of

modern group drive, and hence, the mechanical power transmission equipment made by the manufacturers allied in the association. Yet, since modern group drive is essentially electrical in its basis, the aims of this group do not run entirely counter to the aims of the motor manufacturers, and coincide most admirably with the aims of the public utilities. Modern group drive actually promotes the sale of the larger sizes of motors, and it is the larger sizes of motors which yield motor manufacturers real profits. Modern group drive installations improve the power factor of industrial plant operation and tend to level demand peaks. Hence the net operating revenue of the public utility is increased through this edu-

cational effort. Modern group drive actually fosters the sales of mechanical power transmission equipment and thus reacts to the benefit of the members contributing to the association. It would seem, therefore, that in this third group lies the germ of a real educational effort which will not only have great advantages for the motor manufacturer, the public utility and the manufacturer of mechanical transmission equipment.

ment, but also for the man at whose head the whole problem of education is thrown, the industrial executive who uses power to drive his machines.

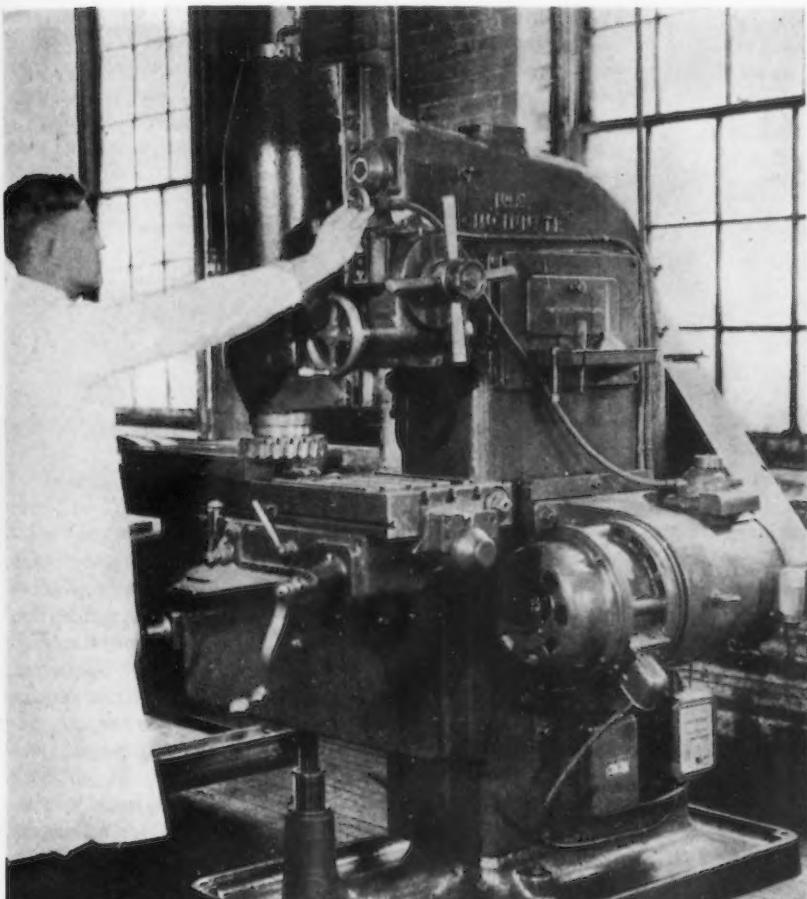
#### A Common Problem

Yet the three groups still stand away from each other and battle a common problem separately. It is true that the motor manufacturers do not actively campaign against modern group drive. They

do not, on the other hand, even when it is to their interests to do so, actively support the idea. A number of utilities are aligned, through membership of their power engineers, in the Power Transmission Clubs, and by means of nominal financial contributions to the modern group drive campaign, but most of them stand by and consider that it is none of their business to join forces actively with modern group drive proponents. And even among the manufacturers of mechanical transmission equipment there are many who will not join in the association campaign. Until some effective coordination of the efforts of these three groups is made, it is quite likely that the industrial executive whom all are trying to educate will become confused and do nothing.

That some half billion dollars is still being wasted in American industry on account of inefficient machine drive methods is ample proof that wider education of the men responsible for this state of affairs is needed. But before he can become educated effectively, it is necessary for those who are trying to educate him to unite on a common story. And that story must be fundamental and impartial. It must cover the economics of the situation. It must start with the production problems of the machine user, and must tell him what, under the particular conditions which face him, are the best and most economical methods of applying power to his machines.

This story has not been put together yet. Once it has been put together, it must be taught to the motor salesmen, electrical con-



ABOVE

**FIG. 5—Infinite variations of speed are obtained at the touch of a finger on this vertical miller with direct motor drive and the New Departure Transitorq.**



AT RIGHT

**FIG. 6—A Lincoln Electric fan-cooled motor drives this "portable" tool—a billet grinder. The sort of job that punishes any drive severely.**

tractors, public utility power engineers and the salesmen of mechanical power transmission equipment before it is passed on by them to the industrial executive. Publicity and advertising aimed at the industrial executive must be geared to this story and consulting mechanical engineers must be told it clearly. This story should be couched in simple, non-technical language for the benefit of the man who, although not himself an engineer, is in charge of and pays the bills for production based on engineering procedures.

Then, for the engineer who must make application of the economic facts told in that story, there should be a manual of power transmission in which the too-large amount of rule-of-thumb knowledge now relied upon so extensively in buying and installing power transmission equipment is cast aside and definite, understandable formulas substituted. A mass of data for this manual is now available in the writings of Staniar, Drake and others, ready to be correlated, simplified and edited from an impartial viewpoint. It should be brought up-to-date in every respect, and from year to year supplementary material should be issued to cover new items of equipment placed on the market, or revised standards of design agreed upon. No really comprehensive manual of an unbiased nature now exists in the field of power transmission, and the catalogs of manufacturers are full of more or less contradictory information.

#### Research

A research laboratory should be set up where special problems of design and application could be studied and solved. In such a laboratory, if sponsored by the three groups (motor manufacturers, public utilities and mechanical equipment manufacturers) a great deal of necessary work could be done along the lines of designing improvements to present drive systems, and devising new types of transmission equipment which would overcome the present limitations, and permit the application of power to the machines of industry under conditions which would utilize that power really efficiently at low cost. Motors, couplings, gears, shafting, hangers, chains, belting, clutches, pillow-blocks, control systems, all

should be regarded not necessarily as competitive equipment, but as available factors to be used wherever they fit best in the design of the drive system which will yield the most economical results for any given situation. Much can be done, under a coordinated system of research, to improve these component factors, and through these improvements to make drive systems genuinely efficient.

One of the jobs to be worked out by such a cooperative research laboratory is the matter of devising really efficient drive systems, not for individual machines, but for production set-ups of machines. For instance, the individual operation of machine tools has reached a high point of development, but when large numbers of these machine tools are operated in an industrial plant as production groups the total cost of power delivered to the machines still remains unduly high. While great strides have been made in the past three years in the matter of designing economical transmission systems for large groups of spinning and weaving machines in the textile industry, no advances worth noting have been made in the design of drive systems in woodworking, metal working or the chemically-controlled groups of industries. In most of these industries machine drives are still treated as problems affecting the operation of individual machines; but in all of them there are fundamental problems to be considered of large numbers of these machines operating as production groups, and hence open to analysis as fitting subjects for the application of power through a system of transmission drive. Entirely too much attention has been devoted to the engineering aspects of driving single machines, in comparison with the time devoted to studying the larger problem of the economics of applying power effectively to large numbers of machines arranged in natural production groups. The experimental data required to overcome this present lack of knowledge can best be accumulated and made of useful value in a transmission research laboratory supported by all the groups interested in battling the common enemy.

#### Executive Clubs

A logical extension of the valuable Power Transmission Club

idea would be the organization in the principal industrial centers of plant executive clubs for the purpose of studying the fundamental principles of power transmission. The present Power Transmission Clubs are maintained for the purpose of training salesmen; hence selling psychology pervades the meetings. Plant executive clubs would be composed of buyers—men with titles ranging from maintenance engineers to general superintendents. The same basic training principles would apply to them, but the application would necessarily have to be from the standpoint of making their work in the plant more effective. Discussions in these clubs would naturally center on specific problems brought up by the members, and the interchange of ideas thus brought about would go far toward clearing up many difficulties now existing because of the lack of widespread knowledge of transmission economics.

The rapidly growing interest in industrial power transmission is evidenced by two unmistakable signs: 1, a large increase in the sales of all types of power transmission equipment, and, 2, a large increase in the amount of editorial space devoted by industrial publications to power transmission subjects. The industrial executive has been brought to a realization of the fact that one of the very few things he can still do to cut production costs is to modernize his application of power to machines. The three groups of manufacturers interested in showing him how to do that have not as yet done an effective job of education. By combining their resources and coordinating their educational efforts, they can make much greater progress, to their own advantage as well as to the advantage of industry as a whole. The ground has been well broken already. The time is ripe. A few years hence, industry will undoubtedly be again at the point where the cry is for production—at any price, so long as goods are produced. Today, and for some time to come, the cost of production is still important enough to warrant any changes in methods which will effect appreciable savings. By getting together now in a common educational effort, the wastes of inefficient power application methods

can be largely eliminated by the time that cry for production at any price comes.

#### Additional Approaches

Three additional devices may be effectively employed to further stimulate the present interest in industrial power transmission:

A. The organization of a professional society of power transmission engineers. It has been estimated that there are today about 700 men in the United

power transmission methods and equipment would tend to stimulate in great measure the interest of buyers of equipment in the methods and products of the 350 or more manufacturers of industrial power transmission equipment in this country. Likewise, it would prove an incentive to those manufacturers to cooperate still more intelligently in a unified and co-ordinated educational campaign supported by all factors.

C. Establish, in key industrial

ence, fully able to sell ideas, but not expected to sell equipment. To these men should be turned over any inquiries resulting from the advertising and publicity campaigns carried on by the cooperative organization, for immediate follow-up. The studies and recommendations made by these field engineers as a result of their follow-up work on inquiries should then become the common property of the organization and be distributed to the sustaining members of it



FIG. 7—A novel arrangement of box trusses to support transversely set group lineshafts in the steel pulley department of Dodge Mfg. Corp., Mishawaka.

States who are qualified to be known as "power transmission engineers." But the special courses in this subject now being taught at many of the leading technical schools, and the extension of the Power Transmission Clubs, as well as the special training being given to their men by many of the manufacturers of power transmission equipment, are rapidly fitting several thousand more men for this title. To begin to organize power transmission engineers into a professional society, with chapters in the major industrial centers, would provide a powerful stimulus to further intensive study of the subject.

B. The organization of an annual (or at least biennial) national exposition of industrial

centers all over the country, a thoroughly trained corps of field engineers, capable of analyzing specific plant problems and of recommending impartiality the systems of drive which will yield the best economic results, and of supervising and stimulating the educational work carried on in both the present Power Transmission Clubs of salesmen, and the proposed plant executive clubs of buyers. These field engineers should be employees of whatever organization may be formed to carry on the common educational effort of the three groups, and should not be employees of any one manufacturer, or any one group of interests within the organization. They should be men of high calibre and large experi-

for sales effort as well as for general transmission information.

Built upon such a foundation as all the foregoing ideas a cooperative advertising campaign dominated by the thought that the right method of driving machines will cut production costs, and an organized campaign of editorial publicity built around specific stories of factual accomplishments, will rapidly and inevitably insure a widespread knowledge of improved power transmission practices throughout all industry, to the benefit alike of the user and producer of power, and the seller of power transmission equipment. The stage is set, the audience gathered. All that delays the raising of the curtain is lack of agreement among the players.

# New Machine Covers



A new model Sykes gear generating machine claimed to be equally suitable for tool-room work, for general jobbing work, or for line production is shown in the accompanying illustrations, together with diagrams of set-ups of various types of work.

Like all other Sykes gear generators, which are built by the Farrel-Birmingham Co., Buffalo, N. Y., this No. 2-C machine operates on the gear shaper principle, using circular gear-form cutters. It has a maximum diameter capacity of 25 in., minimum diameter  $\frac{1}{4}$  in.; maximum pitch 3 DP helical and  $2\frac{1}{2}$

DP straight teeth; minimum pitch 24 DP; maximum face width 8 in.; and minimum face, zero.

ternal gears with straight or helical teeth. In addition, it is in use for other types of work, such as cutting two members of a cluster gear simultaneously, machining cylindrical surfaces on shafts, pistons, etc., cutting spline shafts, both parallel and taper, and cutting some forms of cams. A further development is the cutting of a large

quantity of gears, mounted in a gang, by means of numerous cutters working simultaneously.

## New Features

New features of the 2-C machine include:

1—Speed and feed controls are brought to the front of the machine.

2—The speed and feed change-speed gear box is in one unit.

3—All high speed moving parts are force lubricated; these include the main reciprocating carriage or ram, the helical guides, the cutter heads, the change speed mechanism, and the change gears. The crankpin and its sliding block are also force lubricated.

4—Slide-ways on the saddle for the outer bearing support consist of case-hardened and ground inserts.

5—The slide-ways on the bed of the machine for the main saddle are covered to prevent entrance of grit and dirt.

6—Chips fall through the bed of the machine into chip trays.

7—The coolant pump is driven by a separate motor and has extra large capacity so that when in operation the cutters are covered with coolant.

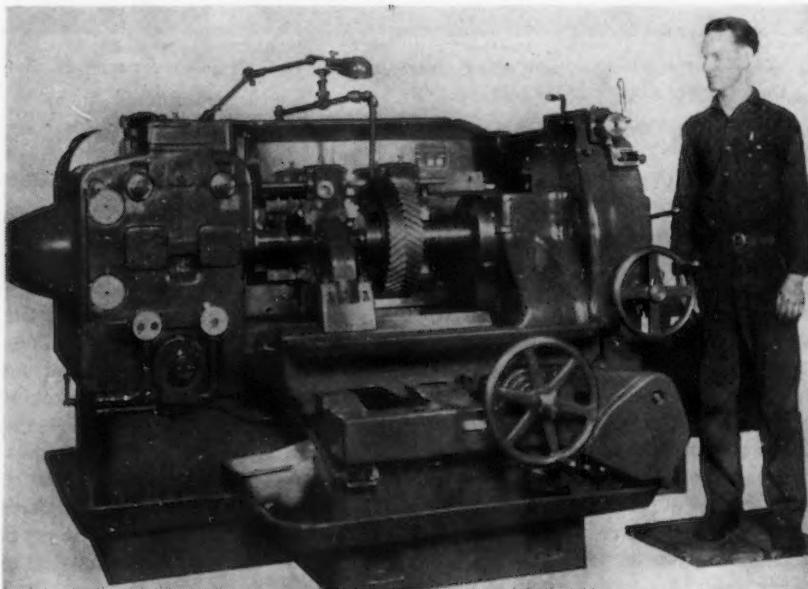


FIG. 1—New model Sykes gear generating machine, the No. 2-C.

DP straight teeth; minimum pitch 24 DP; maximum face width 8 in.; and minimum face, zero.

The machine is said to cut every type of gear used for connecting parallel axes, including the Sykes double helical continuous tooth gear having sharp apices; single helical gears with helical angles up to 50 deg.; straight tooth gears and in-

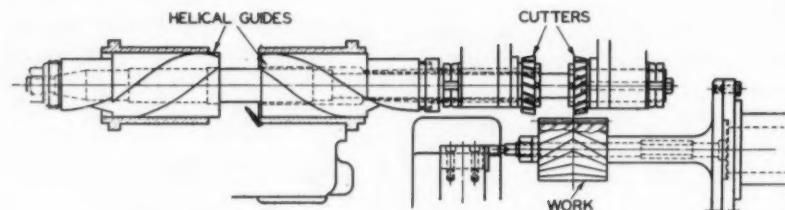


FIG. 3—Set-up for a double helical gear or pinion.

# Wide Range of Requirements

8—The helical guides are of new double-groove type. The moving members and fixed members are approximately the same length. The moving members are hardened and ground. The fixed members are of

10—An improved infeed mechanism makes the machine entirely automatic excepting for mounting the work and taking it off after it is finished.

11—Unusually large face width

capacity, together with the large hole (3½ in. diameter) in the main spindle and the rigid outer work support, make the machine suitable for cutting gears or pinions integral with shafts, or when mounted on long sleeves, and also for a variety of special work. Attention is called by the builders to the large range of adjustment of the outer work support. The base of this support can also be used for carrying special quick-acting work fixtures.

## Set-Ups for Various Types of Work

The capabilities of the machine are more clearly indicated by the accompanying diagrams of set-ups for various types of work.

Fig. 3 shows the set-up for a double helical gear or pinion; and Fig. 4 shows the method of cutting, simultaneously, two helical gears spaced far apart and integral with a shaft.

In Fig. 5 a straight tooth gear is being cut with two cutters, one cutter working on one stroke and the other on the opposite stroke. By this method there is no lost mo-

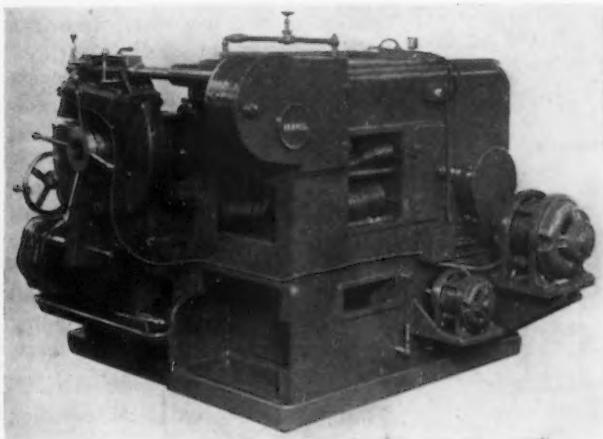


FIG. 2—Rear view of new Sykes machine.

bronze and are easily adjustable for wear.

### All Sliding Surfaces Are Hardened

9—Cutter heads, which embody the relief mechanism, are of unusual design. The relief of the cutters is positive and when the cut is being taken the mechanism carrying the cutters is firmly locked rigidly with the cutter head itself, assuring rigidity as well as accuracy. All sliding surfaces in this mechanism, including the cutter spindles themselves and their bearings, are hardened. It is claimed that such a machine can be run for 30,000 hours without showing wear sufficient to appreciably affect the precision. Nearly all parts which are likely to wear at all are provided with adjust-

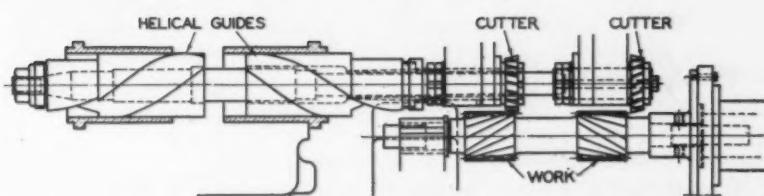


FIG. 4—Method of cutting simultaneously two helical gears spaced far apart and integral with a shaft.

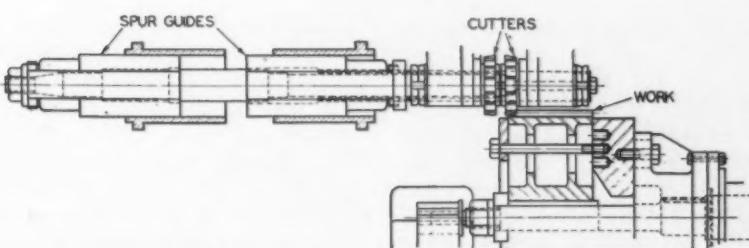


FIG. 5—Straight tooth gear being cut with two cutters, one cutter working on one stroke and the other on the opposite stroke.

tion—no return or idle stroke. Fig. 6 shows the method of cutting an internal gear; and in Fig. 7 two members of a cluster gear are being cut simultaneously.

Fig. 8 shows the method of cutting a large number of gears mounted in a gang, previously referred to. In the example shown

spindles; then they are engaged with a master gear, mounted in the work position, and then the cutter spindle nuts are tightened.

#### Method Applied to Machining of Peripheries

This new method has been applied not only to the machining of

not be tightly gripped, there is less danger of distortion, especially in the case of thin-wall cylinders or pistons.

Fig. 9 shows the set-up for cutting tapered gears, tapered spline shafts or plain conical surfaces. It will be seen that the special set-over outer arbor support is utilized together with spherical joints and a pair of low-angle bevel gears.

#### Variety of Safety Devices

The machine weighs 13,900 lb., and occupies the floor space of 87 x 111 in. The main drive motor is 5 hp. and the coolant pump motor is  $\frac{1}{2}$  hp. When equipped with a two-speed a.c. motor, eight speeds are available; with a d.c. variable-speed motor the number of speeds varies in small gradations from 86 to 400 r.p.m. of the crank. The number of cutting feeds is four, in suitable steps; but the maximum and minimum rates of feed may be changed to anything desired by means of separate pick-off gears.

A variety of safety devices is embodied in the machine. One is a spring-loaded saw-tooth type clutch which rises out of engagement when the feed mechanism is overloaded and trips a switch which is placed in the main electrical circuit. Another consists of a limit switch placed on the main index housing to prevent the possibility of the machine being started if the index worm is out of gear. All mechanism is inclosed, including the long spline shaft which drives the main index worm.

#### High-Speed Automatic Operation

One operator can attend two to four machines, depending on the class of work being done. The maximum cutting speed is 400 r.p.m. of the driving crank, which results in 800 cutting strokes per min. The machine runs quietly; there is no noise except the swish of the oil.

The automatic infeed mechanism can be adjusted to take anything from one to seven cuts for the completion of a gear or a gang of gears. Change in depth feed can be made with the operating wrench, supplied with the machine. When the work is completed the depth feed mechanism automatically moves the work away from the cutters and trips a switch which stops the machine. The operator then places a new blank in position and operates the starting switch; afterward everything is automatic.

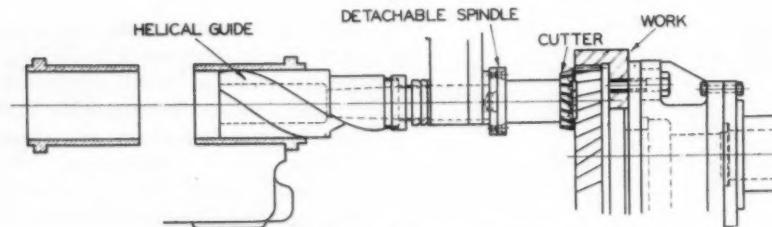


FIG. 6—Method of cutting an internal gear.

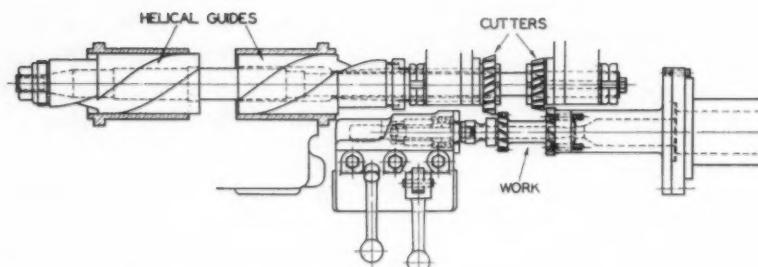


FIG. 7—Two members of a cluster gear being cut simultaneously.

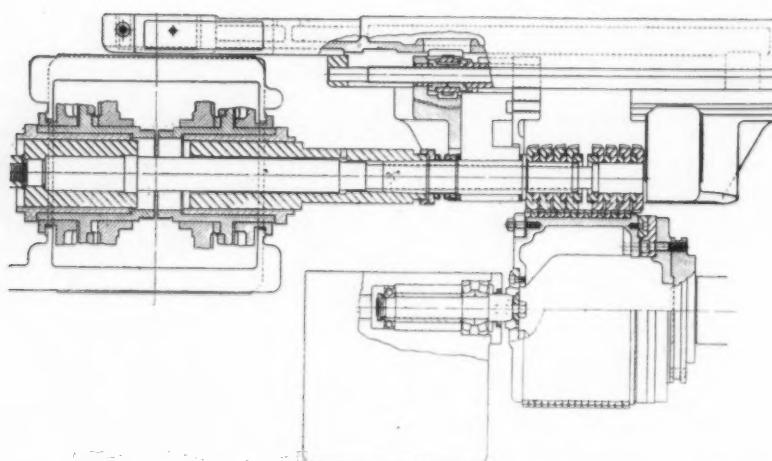


FIG. 8—Method of cutting a number of gears mounted in a gang. Sixteen gear rings on a cylinder, each  $\frac{1}{2}$  in. wide, are cut simultaneously by eight cutters mounted in two gangs of four each.

there are 16 gear rings mounted on a cylinder, each  $\frac{1}{2}$  in. wide, and they are cut simultaneously by eight cutters mounted in two gangs of four each. Each cutter operates on two gears so that the length of stroke is only slightly more than 1 in. The cutters are easily mounted with all teeth in perfect alignment. This is done by first mounting the cutters loose on the cutter

gears, but to the machining of peripheries of various articles such as pistons and steering gear shafts. For such applications plain disk-cutters are used, that is to say, gear-shaping tools without teeth; and the result is said to be a finely finished cylindrical surface at low cost. Tool maintenance is small and there is no trouble in tool-setting; moreover, as the work need

Special quick-acting devices are arranged for repetitive work, but particulars are not given here as they are mainly special for each job. Frequently the change of work, when operating on relatively small pieces, takes only a few seconds, and usually the set-up time takes less than an hour.

The machine is well adapted for cutting high precision gears now required for many newly developed mechanisms. It is used, for example, for cutting double helical gears

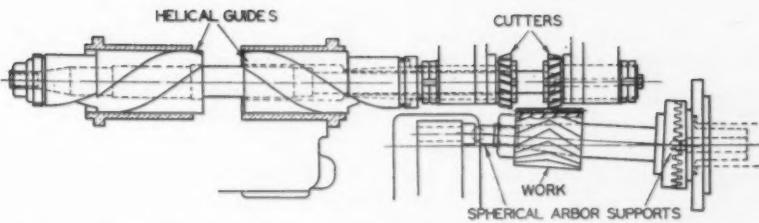


FIG. 9—Set-up for cutting tapered gears, tapered spline shafts or plain conical surfaces.

which transmit the power from airplane engines to propellers. An-

other example is special increasing gears for driving superchargers.

## How to Weld 29 Metals— and Then Some!

By CHARLES H. JENNINGS  
*Engineer in Charge of Welding  
Research, Westinghouse Electric  
& Mfg. Co.*

WHILE the series on "How to Weld 29 Metals" was officially closed in the issue of Feb. 11, we are glad to state that Mr. Jennings, complying with popular request, has supplied the accompanying information covering Jal-Ten steel and wrought iron. At a later date we hope to persuade him to add to this list.

This series has been ex-

ceptionally well received by our readers and we have been literally deluged by requests for reprints. The Iron Age is not in a position to furnish them but Westinghouse has prepared this material in book form and it may be obtained from any of its dealers or from the home office at East Pittsburgh, Dept. 5-M. The price is 50c. per copy.

tion of the range given in Table XLIX. Both bare and shielded-arc type electrodes may be used to arc weld this steel, but the shielded-arc types are preferred because of the superior quality of the welds obtained. Low carbon shielded-arc electrodes produce sound, high quality welds, but the tensile strength is inferior to that of the parent metal. In order to develop the full strength of the parent metal, it is recommended that low molybdenum alloy electrodes be used.

The welding procedure for this steel is the same as that for plain low-carbon steels and similar welding currents and electrode manipulation should be used.

Typical results obtained from butt welds on 3/16 in. plates are given in Table LI.

The hardness values shown in Table LI are the spread in a series of readings over the cross-section of the joint. It will be noted that the affected zone hardness due to the welding heat is of relatively little magnitude of importance.

When hardening tendencies are

JAL-TEN is a carbon-manganese steel of high-yield strength that is manufactured by the Jones & Laughlin Steel Corp. A small percentage of copper is added in order to obtain improved resistance to weather corrosion.

This alloy was developed primarily for railroad car construction and other applications where weight reduction and longer service life are desired. The chemical and physical properties of Jal-Ten make it suitable for hot or cold

forming and for fabrication by welding.

Jal-Ten steel can be obtained with several chemical compositions depending upon the physical properties desired and the service conditions to which it is to be subjected. The general chemical analysis and physical properties are given in Tables XLIX and L.

For the best weldability, the carbon content should be about 0.25 per cent or slightly below and the manganese in the lower por-

TABLE XLIX  
Chemical Analysis of Jal-Ten Steel

Carbon	.....	0.35 per cent max.
Manganese	.....	1.25-1.75 per cent
Phosphorus	.....	0.04 per cent max.
Sulphur	.....	0.05 per cent max.
Silicon	.....	0.30 per cent max.
Copper	.....	0.40 per cent min.

TABLE L

Physical Properties of Jal-Ten Steel	
Yield Point lb./sq. in.	..... 50,000 min.
Tensile Strength lb./sq. in.	..... 80,000 min.
Elongation per cent in 2 in.	..... 20 per cent min.
Endurance Limit lb./sq. in.	..... 50 per cent of T.S.
Impact (Izod) ft. lb.	..... 40

present, as may be the case when welding large sections, it is desirable to preheat to a temperature between 300 and 500 deg. F. If stress relieving is desired, temperatures of 1100-1200 deg. F. will be satisfactory. This annealing temperature will improve the ductility of the welded joint and reduce the hardness adjacent to welds made on heavy structures.

#### Wrought Iron

Wrought iron is defined as "a ferrous material, aggregated from a solidifying mass of pasty particles of highly refined metallic iron with which, without subsequent fusion, is incorporated a minutely and uniformly distributed quantity of slag." The amount of slag present will vary from 1 to 4 per cent by weight, but generally runs about 2 per cent.

The slag in wrought iron is composed essentially of iron and sulphur and oxides of iron, silicon, manganese, calcium, aluminum and phosphorus. Because of the mechanical working employed to form wrought iron into the desired shapes, the slag is usually present

in the form of elongated particles. As a result, the mechanical properties of this material are dependent upon the orientation of the slag streamers with respect to the direction of stress.

Genuine wrought iron is identified because of its low carbon and manganese contents which are generally held below 0.10 per cent by weight. The typical chemical analysis and physical properties of a hand-puddled iron are given in Tables LIII and LIV.

Carbon and manganese contents in wrought iron in excess of 0.10 per cent is usually indication of imperfect refining. The phosphorus and silicon contents are largely incorporated in the slag and not the base metal.

Because of the chemical analysis of wrought iron, it is not susceptible to air hardening and it is suitable for welding. Both bare and shielded-arc type electrodes may be used in the arc welding process and the resultant welds will have physical properties comparable to similar welds made on low carbon steels. The bare type electrodes will produce welds with satisfactory strength, but with their characteristic low ductility. Shielded-arc type electrodes will produce welds of satisfactory properties in all respects.

Although no air hardening tendencies are obtained when welding wrought iron, the presence of the slag may introduce a problem particularly when welding with shielded-arc electrodes. Excessive puddling at the kerf surfaces may produce porosity at the edges of the welds. By holding the amount of puddling at the kerf surface to a minimum, and thereby reducing the amount of contamination of the weld metal by the fused slag, no

TABLE LIII

Chemical Analysis of Wrought Iron	
Carbon	..... 0.06 per cent
Manganese	..... 0.045 per cent
Silicon	..... 0.101 per cent
Phosphorus	..... 0.068 per cent
Sulphur	..... 0.009 per cent
Slag	..... 1.97 per cent

TABLE LIV

Physical Properties of Wrought Iron (Longitudinal)	
Yield Point, lb./sq. in.	..... 31,000
Tensile Strength, lb./sq. in.	..... 46,900
Elongation, per cent in 8 in.	..... 36.0
Reduction of Area per cent	..... 52.0
Endurance Limit, lb./sq. in.	..... 23,000
Impact (Izod) ft. lb.	..... 42.0

trouble will be experienced from porosity.

Welds made on wrought iron with shielded-arc type electrodes will develop tensile strengths superior to the base metal and ductilities ranging from 26 to 36 per cent in 2 in.

Preheating before welding is not required. Annealing after welding is not required unless it is desired to relieve residual stresses. In such cases, annealing temperatures of 1100 to 1200 deg. F. are satisfactory.

• • •

## Carbon Arc Welds

To the Editor: The article by Charles H. Jennings on "How to Weld Twenty-Nine Metals," in your issue of Dec. 24, 1936, is excellent. But his statement on page 34 relating to carbon arc welding does not, we feel, cover the particular topic as fully as the facts warrant.

He states: "Most carbon arc welding is done without the presence of a shielding atmosphere and the resultant welds are brittle. During recent years, however, methods of shielding the arc by painting the weld with a special flux and by introducing a suitable fluxing material into the arc have been developed. The results obtained from such methods of arc shielding are quite varied, but in many cases high quality of welds have been obtained."

First of all, it is quite questionable as to whether most carbon welding is done without a shielding atmosphere.

In reference to the methods of shielding, there are several. One

TABLE LI

#### Properties of Butt Welded Jal-Ten Steel

Carbon 0.25 per cent; Manganese 1.35 per cent; Copper 0.53 per cent;

Parent Metal—As Rolled

Yield Point, lb./sq. in.	Tensile Strength, lb./sq. in.	Elongation per cent in 2 in.	Reduc. of Area in per cent	Hardness Rockwell B
53,670	83,820	37.0	61.7	86-88

TABLE LII  
Butt Welded Joints

Electrode	Joint Strength, lb./sq. in.	Elongation per cent (free bend)	Hardness Rockwell B
Coated low-carbon	82,850	40.4	88-90
Coated carbon-moly	86,020	51.2	86-92

is by painting the weld with flux; another, by introducing into the carbon arc a fibrous autogenizer, the latter a chemically treated string which goes up against the carbon and forms by combustion a gas which shields the metal being deposited. There is also a heavy powdered flux which is deposited ahead of the weld and acts as a shield and as a slag-producing medium to retard the rate of cooling.

In addition to this, metal may be fed into the bead. The carbon arc process has, therefore, the possibility of speed, current, and voltage control, as well as control of the amount of metal fed in and the type of flux, all independently of each other.

Mr. Jennings' statement would seem to intimate that welding by this method is not altogether reliable. However, we would have you consider the following average results: Tensile strength, 65,000-75,000 lb. per sq. in.; ductility, 20 to 35 per cent in 2 in.; elongation of 35 to 60 per cent in the outside fibers; and an elastic limit of 40,000 to 50,000 lb. per sq. in.

Then, just as important, is the fatigue value obtainable, namely, fatigue resistance of 32,000 lb. per sq. in. and impact resistance of 25 to 50 ft.-lb., Izod. Corrosion resistance, it should also be mentioned, is at least equal to that of the parent metal.

Recent uses of the carbon arc process amply bear out the above high physical characteristics. In the TVA Norris Dam project, for example, the Lincoln Electronic Tornado was employed to construct the largest all-welded penstocks built in this country. Plates shipped to the site were automatically welded into 20-ft. diameter pipe. Although the speed of welding by this process was of paramount importance, in quality the welds more than met A.S.M.E. Class I requirements.

In the automotive industry the mufflers of one of the most popular-priced cars, and starter and generator frames, wire wheel hubs, rear axle housings and torque tubes are being automatically welded by the carbon arc process. The torque tubes, made out of plate, are

rolled and then upset, indicative of the high quality of the joint.

In the manufacture of pipe—both small and large sizes and particularly where long transmission lines are involved—the carbon arc process has been extensively employed. Other applications include beer barrels, large and small tanks and range boilers, and such products as rectangular tanks and steel cabinets.

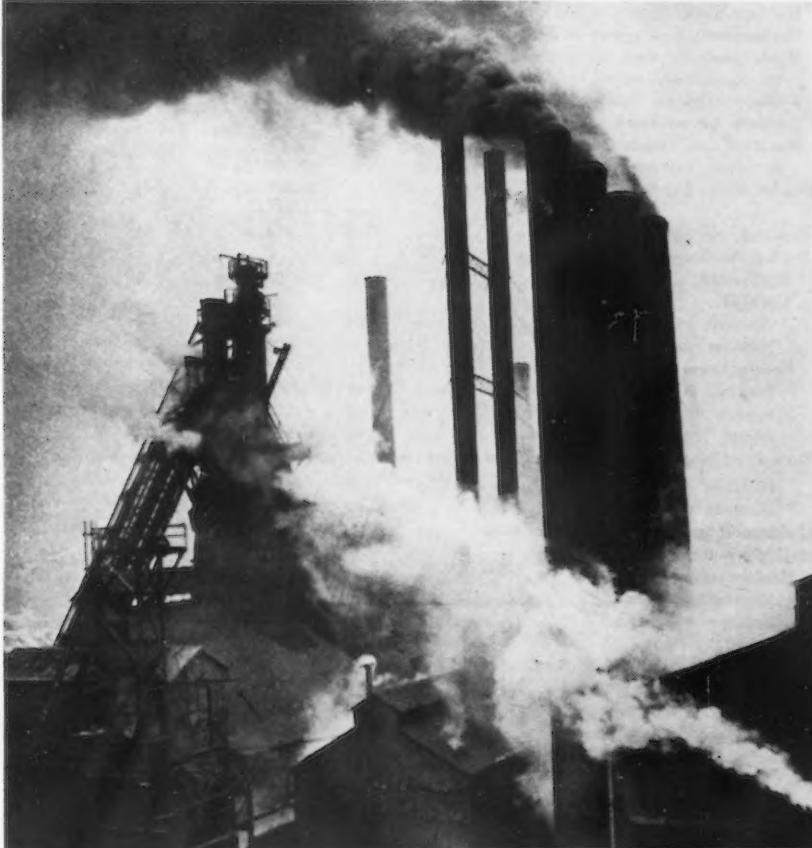
Manufacture of transformer cooling fins represents one of the most interesting applications of the carbon arc. A strip of steel is drawn into a forming machine and then passes through a series of rollers to an Electronic Tornado unit, which welds the edges of the formed tube together. A traveling saw then cuts the tubing into predetermined lengths. This tubing is being welded at the rate of 10 ft. per min. In the construction of barges and similar equipment, the automatic carbon arc process has also been found to give excellent results.

E. W. P. SMITH, Consulting Engineer, Lincoln Electric Co. Cleveland.

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THE old symbol of plenty was the cornucopia, held in the bountiful hands of Demeter. The modern symbol is the smoke-belching stack of the steel plant.

• • •



Photo, Wide World Photos.

TABLE 1

## Summary for the Industry: 1935, 1933, and 1931

(Because they account for a negligible portion of the national output, plants with annual production valued under \$5,000 have been excluded since 1919.)

	1935	1933	1931	1933-35	1931-35	Per Cent of Increase or Decrease (-)
Number of establishments.....	259	232	279	11.6	-7.2	
Wage earners (average for the year) <sup>1</sup>	28,186	12,714	21,262	121.7	32.6	
Wages <sup>2</sup>	\$37,260,565	\$12,596,212	\$25,149,816	195.8	48.2	
Cost of materials, fuel and purchased electric energy <sup>2</sup> .....	\$36,347,430	\$10,844,323	\$21,900,879	235.2	66.0	
Value of products <sup>2</sup> .....	\$121,832,570	\$41,433,523	\$81,286,568	194.0	49.9	
Value added by manufacture <sup>3</sup> .....	\$85,485,140	\$30,589,200	\$59,385,689	179.5	43.9	

<sup>1</sup> Not including salaried officers and employees. Data for such officers and employees will be included in a later report. The item for wage earners is an average of the numbers reported for the several months of the year. In calculating it, equal weight must be given to full-time and part-time wage earners (not reported separately by the manufacturers), and for this reason it exceeds the number that would have been required to perform the work done in the industry if all wage earners had been continuously employed throughout the year. The quotient obtained by dividing the amount of wages by the average number of wage earners cannot, therefore, be accepted as representing the average wage received by full-time wage earners. In making comparisons between the figures for 1935 and those for earlier years, the possibility that the proportion of part-time employment varied from year to year should be taken into account.

<sup>2</sup> Profits or losses cannot be calculated from the census figures because no data are collected for certain expense items, such as interest, rent, depreciation, taxes, insurance, and advertising.

<sup>3</sup> Value of products less cost of materials, fuel, and purchased electric energy.

TABLE 2  
Products, by Class, Number and Value: 1935 and 1933

	1935		1933	
	Number	Value	Number	Value
1. Machine Tool industry, all products, total value .....	....	\$121,832,570	....	\$41,433,523
2. Machine tools .....	....	83,077,076	....	23,266,205
3. Replacement and repair parts.....	....	11,570,873	....	5,694,269
4. Other products (not normally belonging to the industry), value, and receipts from sale of electric energy.....	....	23,871,509	....	11,210,363
5. Receipts for contract and repair work.....	....	3,313,112	....	1,262,686
6. Machine tools made as secondary products in other industries.....	....	1,991,775	....	1,670,027
Machine tools, aggregate value (2 and 6).....	....	85,068,851	....	23,936,232
Bending machines .....	629	581,755	343	226,358
Boring machines:				
Horizontal .....	321	1,592,222	98	440,164
Vertical:				
Number reported .....	24	306,607	20	78,563
Number not reported .....	....	33,670	....	....
Special types:				
Boring, drilling, and milling combined.....	80	1,178,337		
Boring and turning combined.....	36	321,469	{(2)}	374,215
Other, including jig borers.....	94	719,996		
Broaching machines (other than keyseaters):				
Number reported .....	219	668,210	{(2)}	{(2)}
Number not reported .....	....	156,886		
Cutting-off machines (see end of table)				
Drilling machines:				
Horizontal:				
Number reported .....	140	704,159	{(2)}	304,017
Number not reported.....	....	269,927	....	....
Vertical				
Multiple-spindle other than sensitive:				
Number reported .....	360	1,143,979	45	154,137
Number not reported.....	....	64,333	....	....
Standard .....	661	398,642	233	105,132
Sensitive (including bench type):				
Single-spindle:				
Number reported .....	8,398	450,295	3218	337,018
Number not reported.....	....	205,092	....	....
Multiple-spindle .....	428	613,466	56	62,268
Radial:				
Number reported .....	250	774,272	{(2)}	304,106

# Machine Tool 1935 Valued

EMPLOYMENT and production in the machine tool industry in 1935 showed striking increases as compared with 1933 and substantial increases over 1931, according to preliminary figures compiled from returns of the recent biennial census of manufacturers, released by Director William L. Austin, Bureau of the Census, Department of Commerce.

Machine-tool manufacturers employed 28,186 wage earners in 1935, an increase of 121.7 per cent over 12,714 reported for 1933, and their wages, \$37,260,565, nearly tripled as compared with the 1933 figure, \$12,596,212. The total production of machine tools in 1935 was valued at \$85,068,851, an increase of 255.4 per cent over \$23,936,232 reported for 1933.

# Production in

at \$85,068,851

This industry, as constituted for census purposes, embraces establishments engaged primarily in the manufacture of power-driven machines generally covered by the designation "machine tools." Certain types of machines designed for working metal—especially sheet-metal-working machines, welding machines, wire-drawing machines, and wireworking machines—do not come within the scope of this classification and consequently are assigned to other industries.

Summary statistics for 1935, with comparative figures for earlier years, are presented in Table 1, and detailed production statistics for 1935 and 1933 are given in Table 2. All figures for 1935 are preliminary and subject to revision.

	1935		1933	
	Number	Value	Number	Value
Number not reported.....	....	324,426	....	....
Combined vertical and horizontal.....	42	252,966		
Drilling and tapping.....	....	752,036		
Other special, including combined vertical and horizontal, automatic, and universal-head:			(2)	669,237
Number reported .....	173	539,392		
Number not reported.....	....	360,104		
Honing machines:				
Number reported .....	118	383,129	55	125,320
Number not reported.....	....	30,360	....	....
Forging machines:				
Drop hammers and presses (impression-die).....	71	494,290		
Forging hammers (flat die):				
Number reported .....	18	41,147		
Number not reported.....	....	11,422		
Other, including bulldozers and upsetters.....	....	1,517,694		
Gear-cutting machines.....	896	4,612,029	(2)	1,029,765
Grinding machines:				
External-cylindrical.....	618	3,185,921		
Universal.....	208	646,978		
Surface.....	1,110	1,931,889	167	329,745
Cutter and tool.....	575	712,928	172	203,606
Internal-cylindrical.....	503	2,588,024		
Drill.....	302	101,564		
Snagging or tool grinders (hand), wet or dry.....	1,188	73,556		
Other, including disk.....	....	3,449,083	(2)	2,048,158
Lathes:				
Bench (plain and screw-cutting).....	12,072	1,125,477		
Engine:				
General-utility:				
Capacity 16-in. swing and under.....	1,935	2,249,289		
Capacity over 16-in. swing and including 22 in.....	504	1,058,129	3,283	1,424,973
Capacity over 22-in. swing and including 36 in.....	96	490,311		
Heavy-duty over 36-in. swing.....	14	157,869		
Gap.....	18	32,923		
Automatic single-spindle:				
Bar and chucking:				
Number reported .....	823	2,298,028		
Number not reported.....	....	959,174		
Automatic multiple-spindle:				
Bar:				
Number reported .....	511	2,971,756	242	1,185,203
Number not reported.....	....	632,103		
Chuck:				
Number reported .....	294	2,548,015		
Number not reported.....	....	576,818		
Turret:				
Horizontal hand-operated:				
Ram-type.....	633	1,491,427		
Saddle-type, standard and heavy-duty:				
Number reported .....	290	1,699,923	201	516,372
Number not reported.....	....	413,789		
All other lathes, including vertical-turret, polishing and buffing (bench and pedestal), and hand or speed.....	(2)	1,169,774	(2)	851,386
Milling machines:				
Plain .....	410	990,427	135	359,515
Universal .....	582	1,608,090	120	294,569
Vertical .....	406	1,410,536	69	191,294
Planer type .....	81	675,325		
Other, including automatic and Lincoln-type:				
Number reported .....	651	2,241,181	(2)	495,893
Number not reported.....	....	30,124		
Planers (see end of table)				
Portable tools:				
Drills:				
Electric:				
Number reported .....	68,388	2,380,524	19,091	775,357
Number not reported.....	....	....	....	94,169

(CONTINUED ON NEXT PAGE)

## (CONTINUED FROM PREVIOUS PAGE)

	1935		1933	
	Number	Value	Number	Value
Pneumatic:				
Number reported .....	7,449	1,035,621	5,024	633,488
Number not reported.....	....	1,457,340	....	....
Grinders:				
Electric:				
Number reported .....	20,764	917,075	5,968	200,541
Number not reported.....	....	....	....	60,025
Pneumatic .....	4,533	486,264	2,344	205,698
Hammers (chipping, riveting, calking, etc.):				
Electric .....	965	115,932	428	60,821
Pneumatic:				
Number reported .....	11,833	714,173	10,824	568,456
Number not reported.....	....	156,359	....	....
Other (including portable motor-driven garage equipment), and those not reported by kind:				
Number reported .....	14,737	790,748		
Number not reported.....	....	3,624,882		
Flexible-shaft:				
Number reported .....	2,563	289,760		
Number not reported.....	....	188,100		
Presses (except forging presses):				
Forging and stamping:				
Number reported .....	1,635	3,912,867	755	1,105,799
Number not reported.....	....	556,953	....	325,767
Punch:				
Number reported .....	376	515,417	(*)	99,971
Number not reported.....	....	112,776	....	....
Other .....	....	931,231	(*)	164,060
Punching machines (see end of table)				
Riveting machines (not portable):				
Number reported .....	486	128,012		
Number not reported.....	....	67,429		55,185
Shears:				
Vertical and slotters:.....	76	208,733		
Horizontal:				
20-in. stroke and under.....	247	401,033		
Over 20-in. stroke and including 28 in... Over 28-in. stroke.....	81 58	179,987 130,918	35	58,458
Shears:				
Alligator, rotary, and combination punch and shear .....	175	189,450		
Straight .....	482	549,253	105	124,022
Other, including hand-lever and foot-power (see end of table)				
Threading machines:				
Other than pipe-threading:				
Die and rolling types.....	316	426,984		
Milling type .....	26	188,812		
Tapping machines:				
Number reported .....	313	321,996		
Number not reported.....	....	251,563		
Pipe-cutting and threading machines:				
Single-head .....	718	656,525		
Multiple-head (number not reported)....	....	139,877	4359	198,934
Cutting-off machines:				
Band-saw .....	75	52,453		
Hack-saw .....	879	344,754		
Other, including cold-saw.....	43	128,264		
Planers:				
Standard, over 36 in.....	16	251,439		
Open-side .....	25	172,989		
Other, including standard 36 in. and under.....	101	128,570		3,437,083
Punching machines (not portable):				
Shears, other than those specified above, including hand-lever and foot-power:				
Number reported .....	522	39,398		
Number not reported.....	....	5,708		
All other machine tools.....	....	2,834,243		

<sup>1</sup> Revised.<sup>2</sup> No comparable data.<sup>3</sup> Not strictly comparable with corresponding figure for 1935 because of changes in the form of questionnaire used in canvassing this industry.<sup>4</sup> Estimated in small part.Acme Steel Co.  
Offers Floorsteel

VER eight years ago a maintenance engineer at the Riverdale works of the Acme Steel Co. was presented with the problem of finding an economical and satisfactory solution to the mills floor-maintenance problem. After a thorough analysis of the problem, a new material was devised and manufactured in the Acme plant. The material to be tested was made from  $\frac{1}{8}$  x 0.065 in. strip steel, formed into  $1\frac{1}{4}$  x  $1\frac{1}{4}$  in. mesh, and supplied in rolls. The material thus formed was quickly and easily installed. It was laid on the subsurface over which concrete was poured, worked into the mesh and leveled.

The new floor armoring material was watched closely for some time, and as no flaws developed, additional installations were made. Now, after over eight years of constant grinding of truck wheels over the protected flooring, the exposed edges of the small mesh have become slightly mushroomed, presenting an increased area of steel in the floor surface. The company states that cracks and holes have not developed in this section of the floor.

Because of the success of the application in their own plant, Acme decided to market their new product. As Acme Floorsteel is applicable to exterior installation as well as interior, one of its chief uses will be for loading platforms.

## Eliminates Sulphur From Pig Iron

TOKIO (*Special Correspondence*).—A pig iron refining process by which sulphur content may be eliminated while carbon may be reduced to 2.4 per cent, has been developed by Shingo Unodoro, technical superintendent and director of the research laboratory of the Yawata Iron & Steel Works of the Japan Iron Mfg. Co. (Nihon Seitetsu). Details of the process have not been disclosed, because they are the object of a patent application, but it is understood that a chemical desulphurizing agent is employed. Carbon is reduced by a special blower and a method to distribute heat evenly. The process apparently constitutes a part of Mr. Unodoro's long study which is being aimed at developing a new direct steel refining process.

# Current Metal Working Activity Statistically Shown

These Data Are Assembled by The Iron Age from Recognized Sources and Are Changed Regularly as More Recent Figures Are Made Available.

	January, 1937	December, 1936	January, 1936	Year, 1935	Year, 1936
<b>Raw Materials:</b>					
Lake ore consumption (gross tons)*.....	4,694,312	4,551,379	2,951,568	30,857,862	44,639,318
Coke production (net tons)*.....	4,629,532	4,608,655	3,450,342	35,141,261	46,317,087
<b>Pig Iron:</b>					
Pig iron output—monthly (gross tons)*.....	3,211,500	3,115,037	2,025,885	21,007,802	30,618,797
Pig iron output—daily (gross tons)*.....	103,597	100,485	65,351	57,556	83,658
<b>Castings:</b>					
Malleable castings—production (net tons)*.....	.....	61,674	48,198	456,395	571,696
Malleable castings—orders (net tons)*.....	.....	67,035	43,852	452,611	576,334
Steel castings—production (net tons)*.....	.....	83,615	44,298	398,988	805,691
Steel castings—orders (net tons)*.....	.....	159,430	59,019	400,157	909,080
<b>Steel Ingots:</b>					
Steel ingot production—monthly (gross tons)*.....	4,736,697	4,431,645	3,045,946	33,417,985	46,919,362
Steel ingot production—weekly (gross tons)*.....	1,069,232	1,002,535	687,572	640,928	897,463
Steel ingot production—per cent of capacity*.....	81.42	77.66	51.40	48.54	68.52
<b>Finished Steel:</b>					
Trackwork shipments (net tons)*.....	7,246	5,579	3,366	42,229	68,813
Steel rail orders (gross tons)*.....	25,700	125,290	208,541	533,120	1,053,230
Sheet steel sales (net tons)*.....	.....	336,758	174,805	2,473,489	2,720,330
Sheet steel production (net tons)*.....	.....	230,581	223,000	2,424,990	2,598,140
Fabricated shape orders (net tons)*.....	130,651	166,542	120,364	1,058,603	1,609,016
Fabricated shape shipments (net tons)*.....	92,020	121,775	79,995	1,095,216	1,548,205
Fabricated plate orders (net tons)*.....	.....	51,017	38,709	258,315	484,038
Reinforcing bar awards (net tons)*.....	10,220	18,550	62,210	318,340	334,790
U. S. Steel Corp. shipments (tons)*.....	1,149,918	1,057,365	721,414	7,371,299	10,825,132
Ohio River steel shipments (net tons)*.....	96,400	111,450	65,760	926,174	1,169,321
<b>Fabricated Products:</b>					
Automobile production, U. S. and Canada*.....	399,426	519,132	377,306	4,119,811	4,616,857
Construction contracts, 37 Eastern States*.....	\$242,844,000	\$199,695,700	\$214,792,800	\$1,844,544,900	\$2,675,296,000
Steel barrel shipments (number)*.....	.....	895,481	542,597	6,872,452	8,600,493
Steel furniture shipments (dollars)*.....	.....	\$2,112,972	\$1,586,446	\$15,523,579	\$19,245,935
Steel boiler orders (sq. ft.)*.....	651,063	1,872,139	623,364	6,245,158	11,511,557
Locomotive orders (number)*.....	46	112	14	87	533
Freight car orders (number)*.....	10,881	19,035	1,050	18,699	67,544
Machine tool index*.....	200.3	257.7	110.8	+99.9	+201.7
Foundry equipment index*.....	190.9	283.3	127.0	+119.5	+224.9
<b>Foreign Trade:</b>					
Total iron and steel imports (gross tons)*.....	.....	52,584	50,489	470,015	666,838
Imports of pig iron (gross tons)*.....	.....	10,423	15,036	130,937	165,909
Imports of all rolled steel (gross tons)*.....	.....	19,968	22,958	216,628	270,594
Total iron and steel exports (gross tons)*.....	.....	244,156	241,564	3,063,505	3,162,694
Exports of all rolled steel (gross tons)*.....	.....	126,173	79,100	897,883	1,167,244
Exports of finished steel (gross tons)*.....	.....	117,979	74,254	767,590	1,040,815
Exports of scrap (gross tons)*.....	.....	103,026	153,906	2,044,506	1,881,933
<b>British Production:</b>					
British pig iron production (gross tons)*.....	650,700	671,400	595,500	6,426,400	7,685,600
British steel ingot production (gross tons)*.....	998,900	1,019,200	912,500	9,842,400	11,706,300
<b>Non-Ferrous Metals:</b>					
Lead production (net tons)*.....	43,635	47,085	36,296	421,764	463,187
Lead shipments (net tons)*.....	45,718	51,646	34,590	433,456	512,975
Zinc production (net tons)*.....	40,025	47,050	41,917	431,499	524,271
Zinc shipments (net tons)*.....	50,638	59,821	46,468	455,746	563,273
Deliveries of tin (gross tons)*.....	7,615	6,930	6,535	59,110	74,005

\* Three months' average.  
Source of figures: \* Lake Superior Iron Ore Association; <sup>b</sup> Bureau of Mines; <sup>c</sup> THE IRON AGE; <sup>d</sup> Bureau of the Census; <sup>e</sup> American Iron and Steel Institute; <sup>f</sup> National Association of Flat-Rolled Steel Manufacturers; <sup>g</sup> American Institute of Steel Construction; <sup>h</sup> United States Steel Corp.; <sup>i</sup> United States Engineer, Pittsburgh; <sup>j</sup> When preliminary, from Automobile Manufacturers Association—Final figures from Bureau of Census; <sup>k</sup> F. W. Dodge Corp.; <sup>l</sup> Railway Age; <sup>m</sup> National Machine Tool Builders Association; <sup>n</sup> Foundry Equipment Manufacturers Association; <sup>o</sup> Department of Commerce; <sup>p</sup> British Iron and Steel Federation; <sup>q</sup> American Bureau of Metal Statistics; <sup>r</sup> American Zinc Institute, Inc.; <sup>s</sup> New York Commodities Exchange.

# THIS WEEK ON THE ASSEMBLY LINE



*... Production in the U. S. and Canada reached new high of 127,134 cars and trucks last week and the quarter may reach 1,335,000 units, the highest first quarter volume since 1929.*

• • •

*... New sit-down strikes in parts plants occurring daily but are being settled within 24 hours as car manufacturers put on pressure to settle in order to maintain schedules.*

• • •

*... Retail sales are running nearly 20 per cent ahead of last year and used car stocks are far lower than at this time a year ago.*

DETROIT, March 8.—With General Motors back into production at practically full swing, it appears that production for the first quarter of 1937 will exceed the total for this quarter for any year since 1929. Production of passenger cars and trucks in the United States and Canada rose to 127,134 units for the week ended March 6, as compared with 115,360 units for the previous week, according to Ward's Automotive Reports. This compares with 88,217 units for the corresponding week in 1936 and with 122,960 units for the previous

peak on 1937 runs recorded for the week ended Dec. 19, 1936. Unless strikes in parts plants should have an adverse effect on production, the total for the month will be in the neighborhood of 560,000 units and for the quarter 1,335,000 cars and trucks.

From the present strategy being employed by the parts manufacturers, it seems likely that there will be no serious hold-up of production despite the continued spread of sit-down strikes. The number of plants on strike at a single time reached a peak of 29 during the last week,

including five and ten cent stores, meat packing houses and cigar making plants. As far as those plants serving the automotive industry are concerned, however, it appears very obvious that on the basis of the record, settlements will be made within 24 hours, with a few possible notable exceptions. This was the case at the Briggs Mfg. Corp., the Murray Corp. and Motor Products last week, all of whom serve principally Ford and Chrysler and none of whom could be responsible for the holding up of these big producers. Therefore they settled within a day. At Thompson Products a settlement was reached after almost a week of the company holding out against further negotiation. Here again the pressure not only from Ford and Chrysler, but principally General Motors, practically forced Thompson to make an agreement with the union, granting large concessions. While negotiations were in progress, several of the motor car companies had already gotten into production on tie rods and drag links and Thompson itself was picking up second-hand machinery to shift production on these parts to its Cleveland plant.

Incidentally, because Thompson Products supplies about 40 per cent of Ford's parts, a representative of Harry Bennett's office, the personnel division of Ford Motor, sat in as an observer at the conference between the management and the UAW. The same observer was also hovering about the conferences between the union and the officers of



BY  
**FRANK J.  
OLIVER**  
*Detroit Editor*  
**THE IRON AGE**

the Timken-Detroit Axle Co., and the Michigan Malleable Iron Co. For over a week the Timken plant had been barricaded by the sit-down strikers and the company had set up temporary office space in a downtown bank building. For a while the management's strategy was to sit tight and refuse to talk to any union representative. Pressure by its principal customers, however, has forced the company to negotiate and an early settlement is indicated.

The Bohn Aluminum & Brass Co. has had three plants shut down since Thursday, including the Michigan Smelting & Refining Co., its raw materials affiliate. Because of its importance in supplying automotive products, including pistons, cylinder heads and bearings, no doubt the management will be forced to arbitrate with the union as has been done in so many other instances in the last week.

#### Retail Sales Up

Meanwhile most automobile companies are reporting retail sales ahead of last year and are setting up production schedules accordingly. Polk's estimate of passenger car sales in January is 280,000, as compared with 215,782 last year and an estimated 220,000 units in February as compared with 176,638 in February, 1936. General Motors units were naturally the ones that were chiefly affected in February as a result of their inability to make deliveries because of the strike, but the reduction was surprisingly small considering the cir-

cumstances. Buick, for example, reported February retail sales of 5153 units as against 6577 last year. Buick has a bank of dealer orders close to 40,000 and expects to average 1200 units a day this month. Oldsmobile is currently producing 1080 units daily and Pontiac hit 1400 a day for two days last week. Pontiac's March budget is 30,000 units. For the first time since the plants were reopened, Chevrolet passed the 6000 daily mark by hitting 6300 assemblies last Thursday. In the meantime, the Ford Motor Co. continues to average approximately 6000 units a day, as it has done in recent weeks.

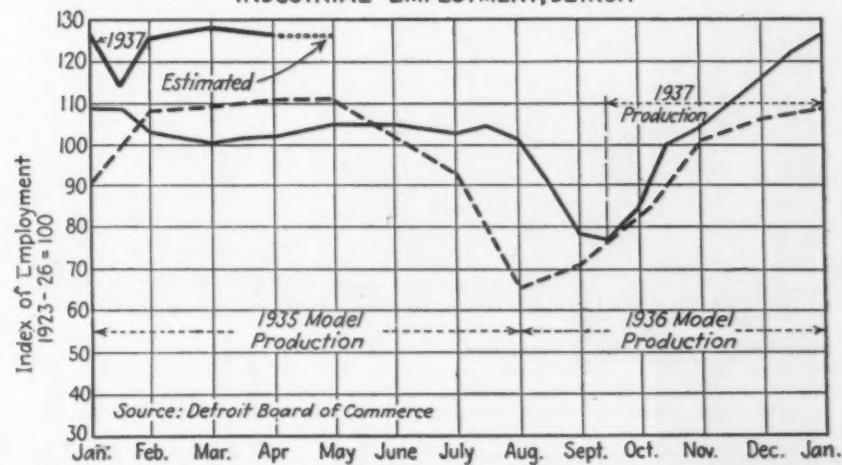
The independents continue to show marked gains over last year. Graham-Paige has produced 35 per

cent more cars on the 1937 run than it did in the previous model year. Nash has built more cars to date than all of its 1936 models. Willys-Overland also has passed its 1936 production by building its 20,000th car last week. As a result of high dealer orders, the scheduled 1937 run has been advanced from 60,000 to 83,000 cars. Studebaker continues to show approximately a 28 per cent gain over the previous year from month to month.

#### Expensive Cars in Demand

The more expensive cars are finding the best market since the depression. Lincoln-Zephyr sales to date are 218 per cent over the same period a year ago and the March schedule calls for 3500 units. Chrysler reports the biggest sales for its

INDUSTRIAL EMPLOYMENT, DETROIT





## *This is the way to gage a thread Quickly and Accurately*

Any mechanical device is no stronger than the threaded parts which hold it together. Such parts, even though they are designed with sufficient strength for the job, may cause serious failures if the threads do not fit properly. There are many kinds of errors that can cause trouble in screw threads. Ordinary gaging methods prove only that threads will or will not assemble, but do not actually reveal the errors which can cause trouble. John-Sons Gages, by the visible completeness of their inspection, prove whether or not threads will assemble accurately and fit dependably.

This system of gaging screw threads is safe, quick and economical. It has been adopted as standard by leading industries, including aeroplane engine manufacturers to whom dependability is of first importance. Let us send you complete information.



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**Pratt & Whitney**  
DIVISION NILES . BEMENT . POND CO.  
HARTFORD . . . CONN.

Custom Imperial in many a year and Cadillac-LaSalle reports shipments and unfilled dealer orders to date of more than the entire 1936 run of 25,905 units. Despite the fact that Cadillac was shut down during the entire month of January, retail sales were 45 per cent above the previous January high back in 1928.

American Bantam Car Co., after months of preparation, announces that it will be in production on a line of small cars by about May 1. The line will feature a  $\frac{1}{4}$ -ton truck as well as a line of passenger cars which have been engineered by Harry A. Miller, well-known designer of racing cars.

The recent change in steel prices for the second quarter caused district sales offices no end of embarrassment during the last few weeks. Because most of the mills were booked up to capacity through the quarter and well beyond, they resisted as diplomatically as possible accepting any new orders until they knew where they stood. As a result, practically all sheet and strip business has been taken on the basis of price at time of delivery, although some skeptics refuse to consider this an order until the confirmation comes through on the scheduled prices. As far as General Motors is concerned, practically all the mills leaned over backward in seeing that its various units were taken care of on material and the tendency has been to lean over backward on the matter of materials shipped under the old fourth quarter prices.

Ford Motor Co. also embarrassed the steel mills a few weeks ago by inquiring for over 80,000 tons of semi-finished material, including slabs and billets. Faced with a shortage of semi-finished material themselves, the mills were rather reluctant to give much to Ford, but felt they had to cooperate in order to keep a good customer satisfied. It now seems apparent that, although Ford inquired for 80,000 tons, the company never expected to get that quantity and is satisfied with what they have been able to pick up to date. In the meantime, three of its open-hearts which were out of heat for a month are now producing at full rate.

#### Automatic Transmissions

The new double-deck buses which Yellow Coach & Mfg. Co. has recently furnished to New York and Chicago coach companies are featuring an automatic transmission of the "Mono-drive" type. In these, shifting takes place automatically when the operator momentarily removes his foot from the accelerator pedal. This application lends itself particularly well to coaches using

rear engine drives, with the transmission located over 20 ft. from the driver's compartment. Borg-Warner Corp. is the licensee to manufacture this transmission for the passenger car and truck field, but as far as is known, has made no applications to date. Aside from the Bendix "Electric Hand" which is used on the Hudson-Terraplane line, there are no American passenger cars today which incorporate an automatic transmission. General Motors has had one under development for several years and has installed equipment at the Buick plant to manufacture it for Oldsmobile. This General Motors automatic transmission is said to be a planetary type incorporating a hydraulic clutch. Working on torque and speed principles, it takes the car up through the three speeds without the necessity of the operator removing his foot from the treadle momentarily.

#### New Sitdown Strikes

A wave of new sitdown strikes early this week tied up the automobile industry in and near Detroit. With auto parts plants just reopening after their labor strikes of last week, Chrysler and Hudson were closed by sitdowners who were demanding recognition of the UAW as sole bargaining agent. Five General Motors Corp. plants at Flint were closed temporarily Monday in a dispute which seemed to revolve around the question of wage differentials in various departments. The General Motors plants, including Fisher Body No. 1 and four Chevrolet divisions reopened after negotiations got un-

der way with Flint plant management on wages and charges of discrimination which had cropped up. The first attempt to settle the Chrysler fracas was balked when company officials were denied the right to enter Highland Park plant offices. Union officials said that this was all a mistake and agreed to clear the gates so that company officials could drive in for the 2 p. m. conference. This conference broke up at 4:30 p. m. to reconvene tomorrow. Officials, office workers and mail will be allowed admission to the plant.

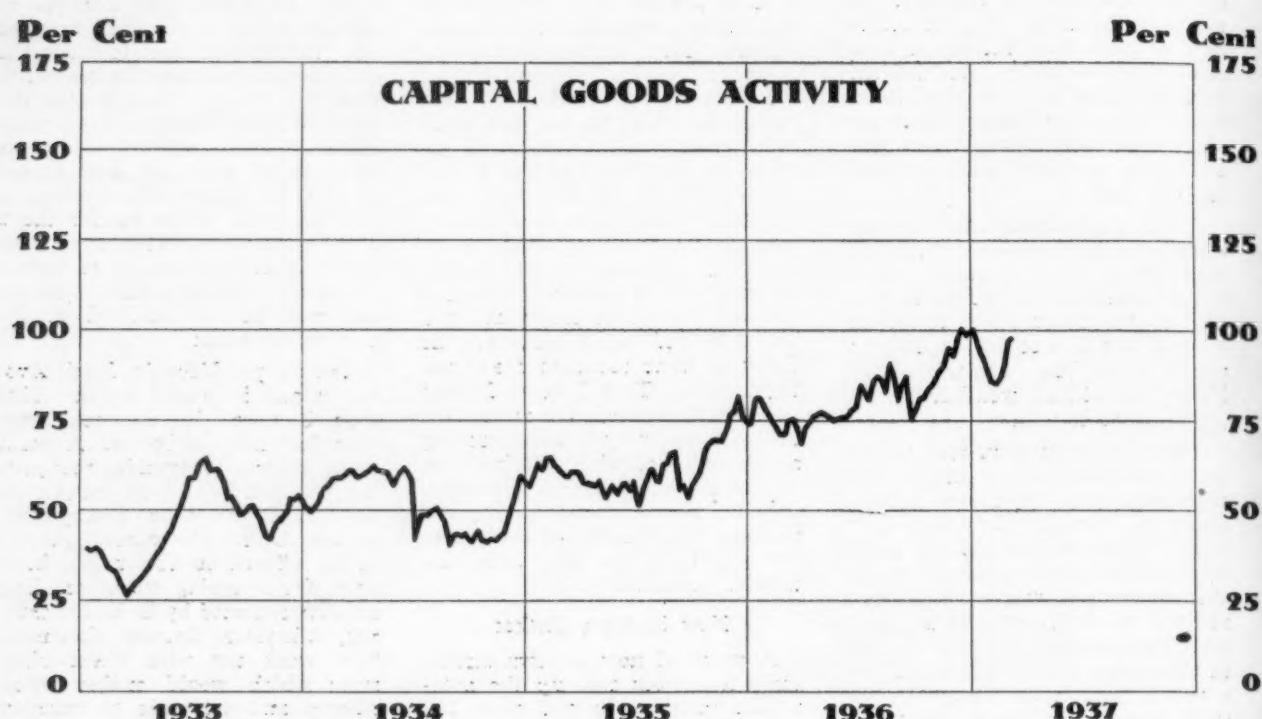
The Briggs Mfg. Co. Mack Avenue plant is closed again. This time because Chrysler could not take deliveries of bodies. A point blank refusal to consider recognizing the UAW as sole bargaining agent at Chrysler precipitated strikes there. The concessions already offered to the union, however, are sweeping ones, including an offer reported by B. E. Hutchinson, Chrysler finance chairman, "To work out with them shop rules which would enable union officers and stewards to function effectively for employees whom they represent."

Meanwhile the General Motors parley with UAW remained deadlocked on the wage question, with the union still insisting on equal pay for all regardless of geography, color or local conditions at various General Motors plants.

A 55-min. demonstration strike in the Packard Motor Car Co. engineering department marked the debut of the Society of Designing Engineers as an active factor in present labor difficulties.



CHEVROLET hit 6300 assemblies a day last week, practically peak production and highest output since the strike settlement. This view at Flint shows the new car conditioning department, corresponding to dealer service heretofore. Similar check-up departments are provided at all ten assembly plants throughout the country.



THE IRON AGE Weekly Index Numbers of Capital Goods Activity  
(1925-27 Average = 100)

Last week .....	97.7	Same week 1933 .....	28.6
Preceding week .....	97.0	Same week 1932 .....	38.7
Same week last month .....	85.3	Same week 1931 .....	71.3
Same week 1936 .....	75.6	Same week 1930 .....	95.8
Same week 1935 .....	59.6	Same week 1929 .....	124.6
Same week 1934 .....	59.9		

THE IRON AGE'S index of capital goods activity rose to 97.7 per cent of the 1925-27 average in the week ended March 6, an increase of 0.7 point over the preceding week and 22.1 points over the corresponding period a year ago.

The rise was heavily contributed to by a large upswing in automobile output and an appreciable increase in steel mill activity. Not for years have mills which produce steel operated their plants at as high a rate as during recent weeks, while in the automotive field further spurt in car and truck assemblies last week raised output to its highest level since 1929.

The outlook for continuance of present levels of production, particularly in steel, is made more promising by new price advances, which should drive in additional orders and expand backlog.

While a decline occurred for the latest week reported in forest products loadings, this was occasioned by a shortened week due to the Washington holiday. The index of this activity, after adjustment

for length of the week and customary seasonal movement, showed no change up or down.

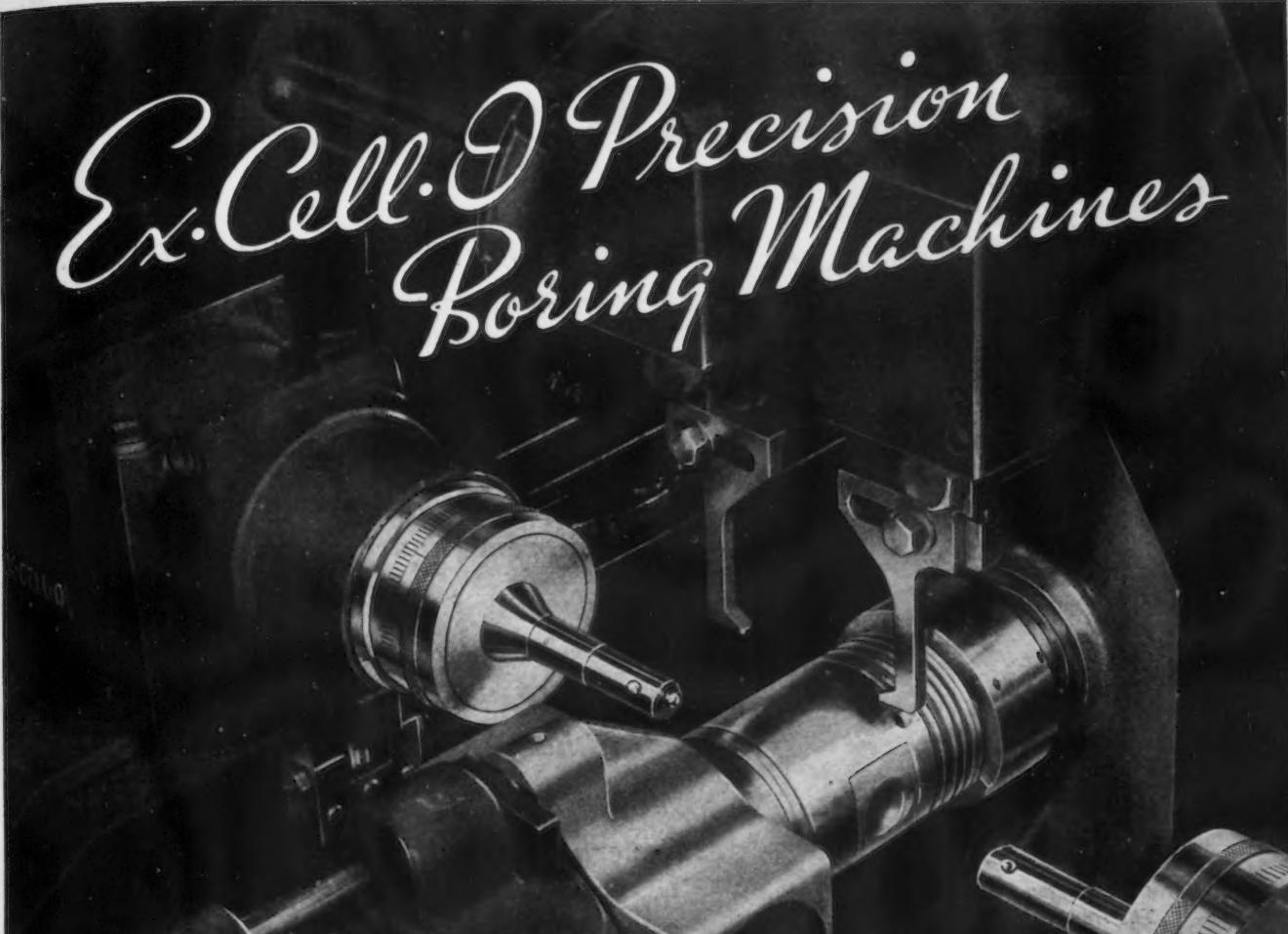
In the Pittsburgh district, however, industrial operations were lower after seasonal adjustment. There was also a loss recorded for the index of construction activity, but not to the extent reflected by the decline in funds allotted for this purpose, shown below, because this index is based on a moving average, rendering it inert to extreme fluctuation.

Actual operations for the week of each of the five series forming the general capital goods index are given below.

	Latest Week	Change from Preceding Week
Steel production (per cent of capacity) .....	85	+2
Automobile production (number of cars and trucks) .....	127,134	+11,774
Railroad loadings of forest products (number of cars) .....	34,679	-2,432
Pittsburgh industrial production and shipments (index number) .....	110.6	-1.2
Construction contracts awarded (total value) .....	\$32,125,000	-\$40,053,000

Components of The Index (1) Steel Ingot Production Rate, from THE IRON AGE; (2) Automobile Production, from Ward's Automotive Reports; (3) Revenue Freight Carloadings of Forest Products, from Association of American Railroads; (4) Industrial Productive Activity in Pittsburgh District, from Bureau of Business Research of University of Pittsburgh; (5) Heavy Construction Contract Awards, from Engineering News-Record.

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**EX-CELL-O AIRCRAFT & TOOL CORPORATION**

**DETROIT • MICHIGAN**





# WASHINGTON. . . . .

... *Stettinius of U. S. Steel and Batt of S.K.F. become new members of Roper's "Advisory Council."*

... *Labor lobby under Berry and Lewis marshals support for President in effort to push Supreme Court measure.*

... *Lewis said not to be keen for hour and wage legislation. Believes he can do the job without Congressional help.*

By L. W. MOFFETT  
Resident Washington Editor,  
*The Iron Age*

... *Government and taxpayer will pay more for steel because of Madam Perkins' rigid stand on Walsh-Healey act.*

... *More light thrown on Government's ordinance plant at Charlestown, W. Va., proposed as Federal steel plant.*

WASHINGTON, March 9.—With a view to associating itself with forthcoming administration legislation, the Business Advisory Council of the Department of Commerce has taken under consideration a suggestion made by Secretary of Commerce Roper that it join with labor and agriculture in studies of the problems of wages, hours, child labor and production control. To this end, Mr. Roper proposed that the Advisory Council consider regional group studies to be headed in a general welfare conference at Washington, "to get the entire national business thought coordinated with the best thinking in agricultural and labor groups." The plan was laid before the Advisory Council at its monthly meeting last Wednesday, which had previously discussed new wage-and-hour proposals, together with a flexible

method for eliminating excessively long hours and low pay. These principles underlie the program on wages, hours and fair trade practices which the administration contemplates enacting at the present session of Congress. They were exhaustively dealt with in the recent report of the Committee on Industrial Analysis in its study of the National Recovery Act which was transmitted to Congress by the President with a message. The study suggested means of approaching the subjects constitutionally and it may be influential in framing final drafts of legislation which are now in tentative form. Mr. Roper said at a press conference that the plans proposed by Donald Richberg and other sources close to the administration are "quite worthy of consideration," adding, however, that he is not prepared to

reach a "too-hurried decision" on any one solution.

Among new members elected to the Advisory Council are Edward R. Stettinius, Jr., New York, chairman of the finance committee of the United States Steel Corp., and William L. Batt, president, S. K. F. Industries, Philadelphia. Among outgoing members of the Advisory Council is Myron C. Taylor, chairman of the United States Steel Corp. Members of the council are chosen by a system of rotation.

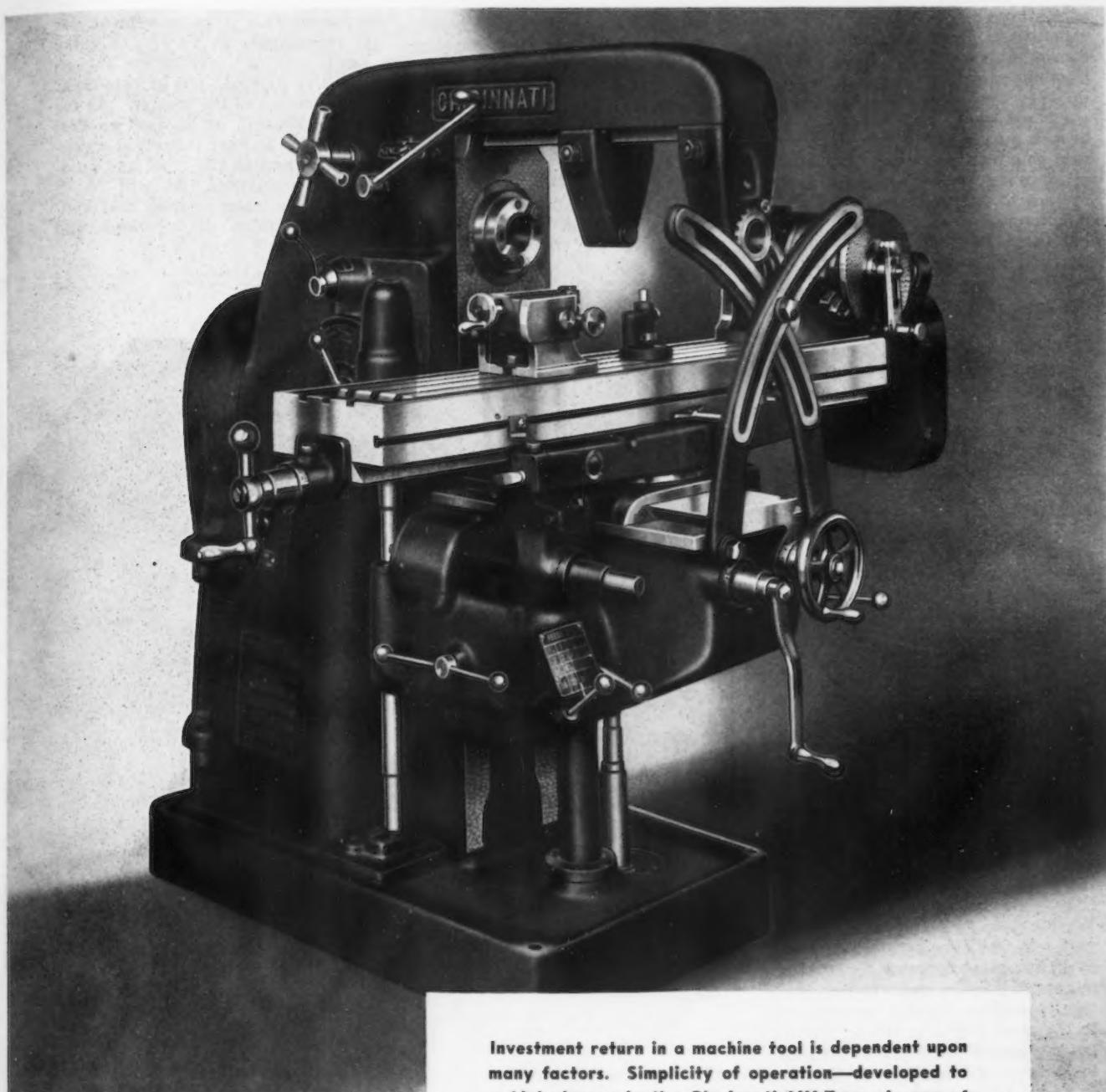
What force the Advisory Council may prove to be as a factor in an administration program remains to be seen. Heretofore its recommendations have received scant consideration.

#### Supreme Court Battle

The intense fight the President is leading to push through his plan

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THE CINCINNATI MILLING MACHINE COMPANY  
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to reorganize the Supreme Court is commonly linked by general opinion to his expressed hope that hour and wage legislation will be enacted at the present session. It is believed he will await action on the so-called judiciary reform program before seeking legislation to set up standards of hours and wages, together with trade practice regulation, along the lines of a considerably modified NRA. The Committee on Industrial Analysis in its critical report on NRA suggested that the legislation be broken into separate measures, but said no effective law can be written to provide an effective Federal system of minimum wages and maximum hours. It was pointed out that conditions in each industry and in each locality differ so widely that it is impossible to lay down an inflexible rule for all.

Organized labor yesterday concentrated its forces in a powerful lobby in Washington to bring pressure upon Congress to support the President's plan to reorganize the Supreme Court. These forces were gathered by Maj. George L. Berry, president of Labor's Non-Partisan League, and for the most part represented John L. Lewis's Committee for Industrial Organization groups. Berry, as coordinator for industrial cooperation, has recommended wage, hour and trade practice legislation and, like the President and organized labor forces generally, has attacked the Supreme Court for invalidating such legislation. For that reason it is campaigning for the plan to pack the court.

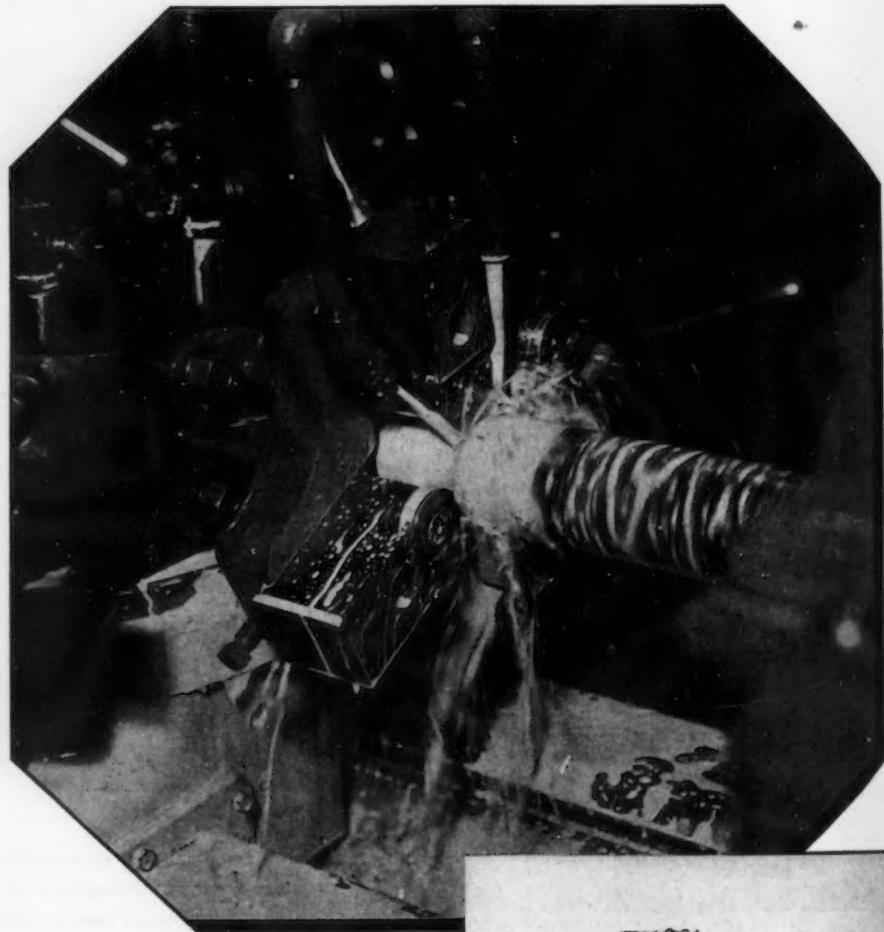
Lewis also is a bitter critic of the court and is a prominent leader in support of the President's judiciary "reform" program. He gives considerable effort in that direction as he continues his drive to organize mass industries along vertical lines. He has his CIO forces in Washington today, and flushed with what he considers a big victory in the steel industry, is seeking to consolidate the gains in preparation to seeking further recognition in the steel industry and to organize the textile industry, moves that have aroused the increased hostility of his bitter rival, the American Federation of Labor, desperately seeking to hold together its craft unions, many of which have shifted to the CIO forces. There is a well-defined belief here that if Green is given a sufficient opening that is compatible with A. F. of L. policies, he will deliver a counter blow against Lewis in steel. It is thought to be quite probable that Green is awaiting development of moves among employee representation groups in the steel industry to organize along what Green would

consider as entirely independent lines, standing ready, if given opportunity, to head them in attacking Lewis's steel organizing effort. Green's refusal to lead employee representation groups as now constituted was couched in terms which some have construed to mean he would enter upon an A. F. of L. unionization drive in steel if he could begin with a satisfactory nucleus, such as appears to be developing in the Chicago-Gary district.

#### The Labor Battle

The CIO-A. F. of L. rift, becoming increasingly acute, has a direct bearing on labor and industrial legislation, perhaps as much as does

the court issue, for until the warfare is ended it is doubted that the administration will push the legislation inasmuch as it might have to openly line up with one side or the other, a move that clearly it is sought to avoid. For one thing it would endanger what seems to be an administration move to build up a nation-wide labor movement. It is represented as favoring the Lewis type of organization, though officially it would not at this point go on record in the matter. As for Lewis himself he is said to feel that if he can push industrial organization through the steel and automotive industries, he will be in such a dominant position that Federal legislation as to wages and

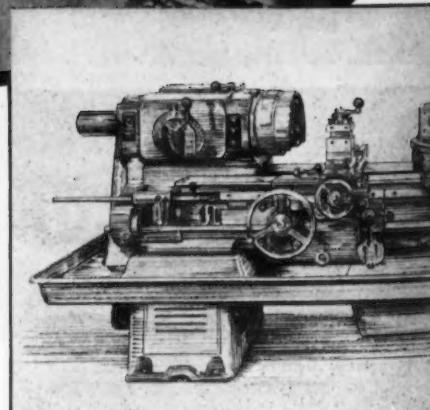


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hours will be of no concern to him, feeling that his own organization can do the job much better.

Meanwhile, Lewis, as might be expected, has expressed strong distaste for that part of the report of the Lonergan Senate Committee which investigated campaign expenditures suggesting prohibition of campaign funds by labor unions and other organizations. Lewis said the suggestion was "not well founded." Lewis was the medium of the greatest contributions to the Roosevelt campaign in 1936. Organized labor force contributions gathered through Lewis are said to have totaled almost \$1,000,000, of which some \$475,000 came from Lewis's United Mine Workers.

## 40-Hour Week Solves Walsh-Healey Steel Problem

**W**ASHINGTON, March 9.—The shift of the steel industry to the 40-hr. week has solved the difficulty of the Navy department getting bids on its steel requirements. It broke the jam that existed by reason of the Walsh-Healey government contracts act being so rigidly administered by Secretary of Labor Frances Perkins. Her adamant stand against granting the request of the Navy Department that she

grant exceptions to the act so that steel for which the department opened bids Dec. 14 and 18 might be obtained for the shipbuilding program, however, means that the government will have to pay a pretty penny in the way of higher prices for steel. For inasmuch as the industry has shortened its hours and increased wages it is face to face with higher wage costs which have risen simultaneously with higher costs of raw materials. Already steel prices have been increased from \$3 to \$8 a ton and some units of the industry are so uncertain of the situation that they are not as yet quoting on second quarter tonnage, being unable to know how much higher costs may rise.

This situation did not prevail when the Navy steel bids were opened and conditioned on exceptions to the Walsh-Healey act, particularly the provision for payment of time and one-half in wages for overtime. Hence the steel would have been bought at the 1936 last quarter levels regardless of the time of delivery, which in the case of Navy Department requirements, often is spread over long periods. The Navy as well as other government departments hereafter will have to pay the higher prices resulting from the granting by the steel industry of the 40-hr. week and increased wages to labor. Other supplies now higher priced also will cost more because they likewise have been held up by reason of the Labor Department's refusal to grant exceptions under the Walsh-Healey act. Its stand was strongly supported if not inspired by organized labor. But while organized labor largely has escaped criticism in Congress, the same is not true of Miss Perkins. She has been particularly criticised because her exception-proof attitude has delayed the naval shipbuilding program which the Navy Department is attempting to prosecute as swiftly as possible.

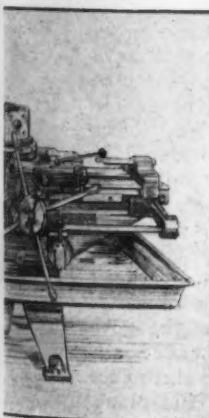
### Vinson Challenges Perkins Power

Severe criticism of this nature was leveled at the Labor Department last Thursday by Representative Vinson, Democrat, of Georgia, chairman of the House Committee on naval affairs in the course of discussion of the naval appropriations bill carrying \$526,555,428 for the fiscal year ending June 30, 1938.

While expressing the hope that



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adoption of the 40-hr. week by the steel industry will remove obstacles in the steel situation, so that steel may be obtained without further delay in the construction of vessels, Mr. Vinson said "this does not clear up the situation of having the Secretary of Labor to sit in veto over the procurement of all other material for the Navy in excess of \$10,000."

He pointed out, as he challenged the power of the Labor Department to refuse to grant exceptions, when asked for by the Navy Department, that other items of importance have been held up because of the Walsh-Healey act. He listed the items which previously had been set forth by Assistant Secretary of the Navy Edison. Among them are machine tools, hydraulic gears, ingot copper, Diesel-driven electric generators and refrigerating and air-conditioning machinery.

"It is submitted that the plain intent of the act is that the responsibility for making determination as to when this impairment is threatened in the case of procurement lies, and should lie, with the Secretary of the Navy," said Mr. Vinson.

He said that it is apparent that the full authority for administering the needs of the Navy in the national defense should be vested in the Secretary of the Navy where the responsibility resides and where the technical knowledge exists for the correct use of judgment and discretion in these matters. Such responsibility, he said, "should not be divided with any other government department or subject to the vagaries of administration of any other department which possesses neither the technical knowledge of the Navy nor the responsibility for the maintenance of that part of the national defense." He proceeded to add that if such construction cannot be placed upon the language of the act as was the intention of Congress, the act should be amended to place these matters solely within the administration of the Secretary of the Navy insofar as Navy business is concerned.

#### Perkins Satisfied

Miss Perkins, however, is pleased with her success in rigidly enforcing the act despite vigorous efforts of the Navy Department to get exceptions, and remains entirely impervious to arguments for them.

The shortened hours and raise in wages in the steel industry gratified her greatly, as would be the case with all other sources if it were not for implications they provide as to higher costs and prices and the possible effect on consumption. Miss Perkins, however, saw no reason to be disturbed over the price rise. She lightly dismissed that point by saying the costs would be distributed among many industries and would not be appreciably felt while the benefit in the way of increased wages would be widespread.

#### Other Troubles for the Navy

The Navy Department evidently does not look upon the situation so easily. This is indicated by the statement of Assistant Secretary of the Navy Edison. While pleased that the Navy steel jam had been broken, he pointed to the difficulty of getting other supplies because of the Walsh-Healey act provisions, and added that even the steel situation will not be definitely clarified until the results of the bidding become known. He was referring to bids which the Navy Department will open on March 16, covering re-advertisement for requirements for six destroyers, three submarines and for stock, a total of 12,359 tons, of which about 9000 tons will be plates and the remainder shapes, bars and special sections. The destroyers will require 6717 tons, the submarines 3126 tons and 2514 tons will be for stock. Mr. Edison of course is aware the prices to be quoted will be based on the costs resulting from the shortened week and increased wages.

#### Government Steel Plant

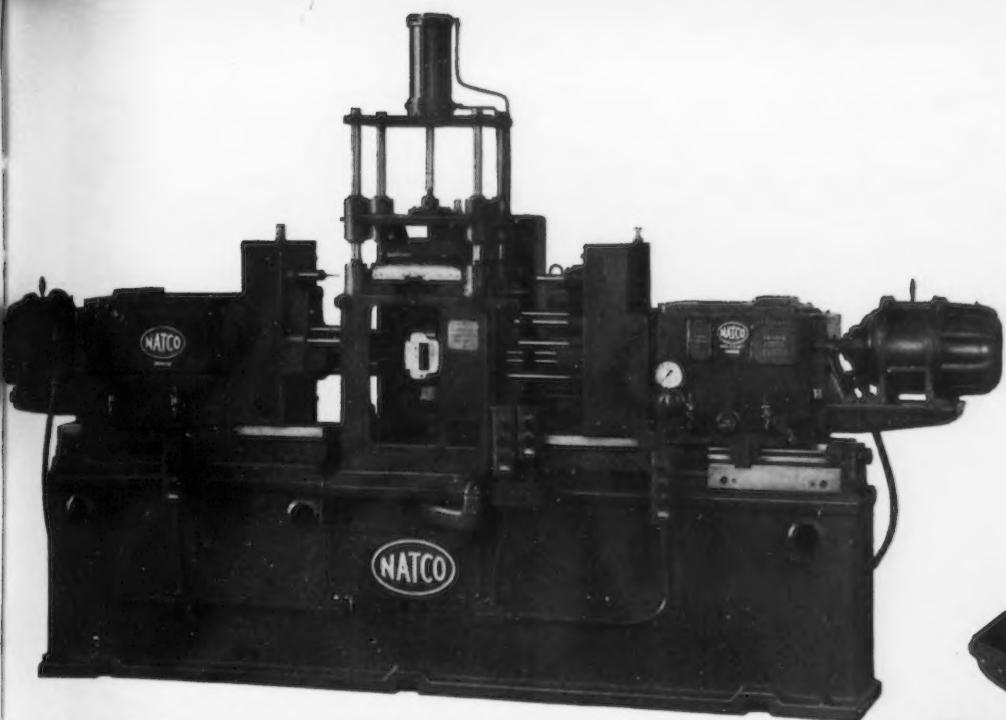
The steel industry obviously would have seen to it that rather than jeopardize the naval shipbuilding program, the Navy Department would get its steel, Walsh-Healey act or no Walsh-Healey act. Actually offers to this end had been made before the industry shifted to the 40-hr. week. The temporary impasse, however, supplied an excuse for political ballyhoo by a group in Congress who "threatened" a drive to have the government set up its own capacity to supply steel needs for the national defense. The project was never seriously considered in any responsible quarter but, if it actually eventuated would, according to reliable sources, mean an outlay of at least \$250,000,000, with a resulting tremendous overhead due to long periods of idle capacity. One suggestion was that the government ordnance plant at South Charlestown, W. Va., idle since Feb. 8, 1922, be expanded. This plant, together with material which has

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been removed since then, has cost about \$24,500,000. This is the figure estimated by the House Committee on Naval Affairs in its report last week on the naval appropriations bill. The committee made an extended inquiry about the plant one year ago to ascertain what justification existed, if any, for retention of the establishment in a shut-down state at a considerable annual expense for personnel and with the need present to incur a large expense to effect repairs and check deteriorations which already had occurred and to make larger amounts annually available to prevent a recurrence of the state of disrepair then found to exist.

No action was proposed by the committee a year ago. The com-

mittee reported that there appeared to be no disposition in any quarter to put it to any other naval use "and it was rather felt \*\*\*\* that possibly the department, in view of the committee's inquiry, might work out and present a definite proposal for the consideration of Congress."

Since then, the committee reported, it finds no change in the *status quo* "beyond indication of continued and further deterioration, including the appearance of termites in sections of the establishment." Having in mind the steel situation which had existed because of the Walsh-Healey act and which since then has disappeared, the committee tentatively suggested that the Navy might find

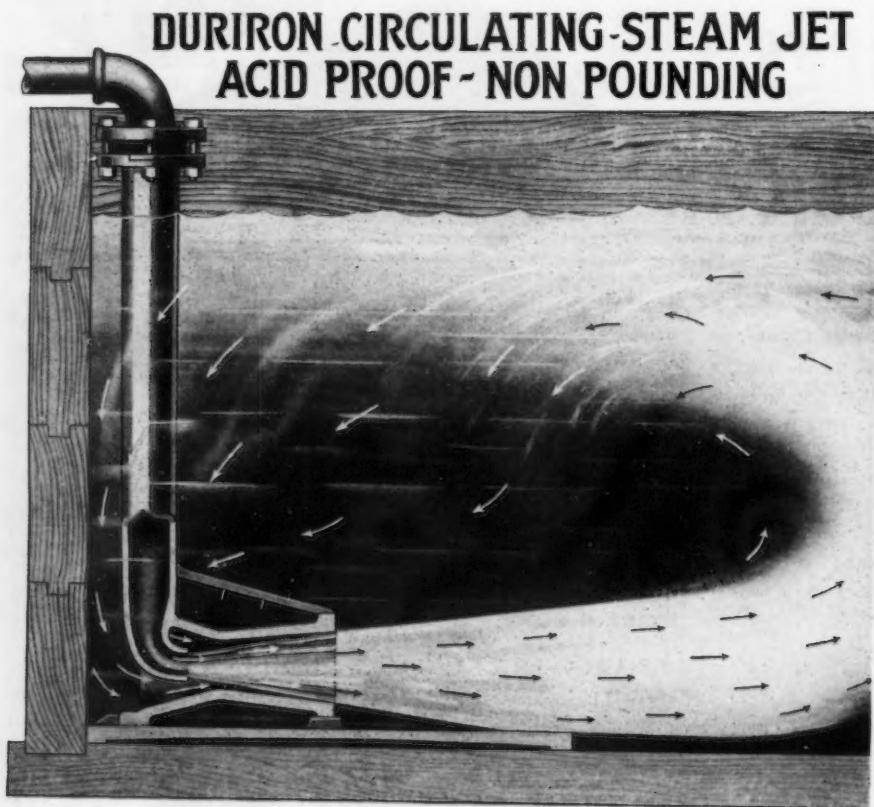
itself in the position of having no other alternative than to reopen the plant to procure steel and gun forgings and projectiles with which to build and supply its ships—which, if it were really done, is a far cry from building up steel capacity to supply all Navy needs. It was indicated to the committee a year ago that it would take about three years to get the plant back into producing major-caliber gun forgings and heavy armor and that to rehabilitate the plant and properly equip it would cost around \$4,400,000.

The committee report threw revealing light on the performance of this costly project. The plant consists of a unit for the manufacture of projectiles and a unit for the manufacture of armor. Work on the former began in August, 1917, and on the latter in October, 1918. The projectile plant went into production about February, 1921. At that time the plant was closed and no armor had been completed. The projectile unit had turned out some gun forgings, a number of 16-in. projectiles and a variety of ordnance fittings and parts, all to the value of \$4,200,000.

The committee feels that if it is not the intention to use the plant disposition should be made of the property "and the government saved the annual expense of half-way maintaining it and of policing it, which has been going on for 15 years. Certainly, such expenses should be held to the lowest practicable minimum pending a definite decision as to the course to be pursued regarding the plant." The committee laid the problem in the lap of Congress. As to the 117 houses on the property which are rented to persons not identified with the plants at an average rental of \$20 a month, the committee said it believes the Navy Department might well inquire into the situation "with a view to seeing that a fair and equitable arrangement exists from the standpoint of the government, the tenants, and the municipality.

This suggestion of unloading the property, however, does not seem to accord with the White House view. The President recently said the government had refused different offers to purchase the property.

In a wider field of steel is the Ellenbogen House resolution, now before the Committee on Rules. The resolution, taking its cue from a recent report of the Bureau of Business Research of the University of Pittsburgh, would have a subcommittee of the Committee on Interstate Commerce thoroughly dissect the steel industry. The



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THE IRON AGE, March 11, 1937—81

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*Considering the  
Quality,  
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MILDALE, CONN.

resolution does not follow the bureau's suggestion in detail but it does so in broad outline as it relates to the industry's pricing, merchandising and labor policies, with suggested government control of pricing. Mr. Ellenbogen had originally prepared to press the Committee on Rules to report out a rule for early House consideration of the resolution. Since then he has told THE IRON AGE that he will make no move in this direction until Chairman Lea of the Committee on Interstate and Foreign Commerce returns to Washington from his home in California.

**Can Simplified  
Practice Revised**

THE standing committee in charge of Simplified Practice Recommendation R155-34, cans for fruits and vegetables, has proposed a revision of this recommendation, and the Division of Simplified Practice of the National Bureau of Standards has mailed copies to all interests for consideration and acceptance. The original recommendation which became effective Sept. 1, 1934, established a simplified list of 27 standard stock sizes for fruit and vegetable cans.

The current revision proposes certain changes in the original schedule of recommended sizes, including the elimination of 11 sizes and the addition of five sizes that have since come into general use and thereby justifying their promulgation as recommended standard stock sizes.

The revised schedule of 21 sizes, when adopted by those interested, will remain in effect until the recommendation is again revised by the standing committee of the industry.

Mimeographed copies of the proposed revision may be obtained

from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

**Rules That Balls  
Are Machine Parts**

THE United States Court of Customs and Patent Appeals has handed down an opinion upholding the ruling of the United States Customs Court that forged steel grinding balls imported by Steel, Inc., were properly assessed at 27½ per cent as parts of machines. The importer had protested that they were properly dutiable at 25 per cent as forgings of steel.

**Capitol Air  
Conditioning Contract  
Awarded**

A \$566,928 contract to complete the air conditioning system in the U. S. Capitol building, home of the Senate and House of Representatives, has been awarded to Carrier Corp. of Newark, N. J.

The new equipment will extend the 1928 Carrier installation that operated only in the chambers of the Senate and the House to include all the offices, corridors, committee rooms, the former U. S. Supreme Court room, Statuary Hall, restaurants, and the famous Dome, landmark of the Capitol. Vice-president John N. Garner's office is among them.

The equipment includes dehumidifiers, fans, pumps, cooling and heating coils, filters and other coordinated machinery, as well as extensive duct systems. Chilled water and heat for the air conditioning will be supplied from central plants.

**STANDARD S.A.E. STEELS IN STOCK**

**2315, 4615, 3140, 5150, 6145, 4150**

Our *Hy-ten Alloy Steels* continue to be in growing demand because they allow us to offer you the benefit of metallurgical improvements and developments long before they are incorporated in the S.A.E. standards.

**WHEELOCK, LOVEJOY & COMPANY, INC.**

CAMBRIDGE

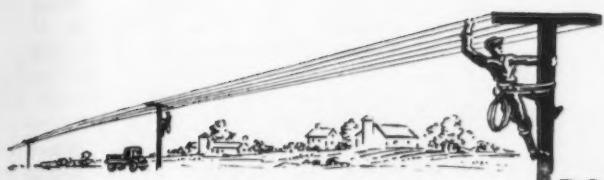
CLEVELAND

CHICAGO

NEWARK

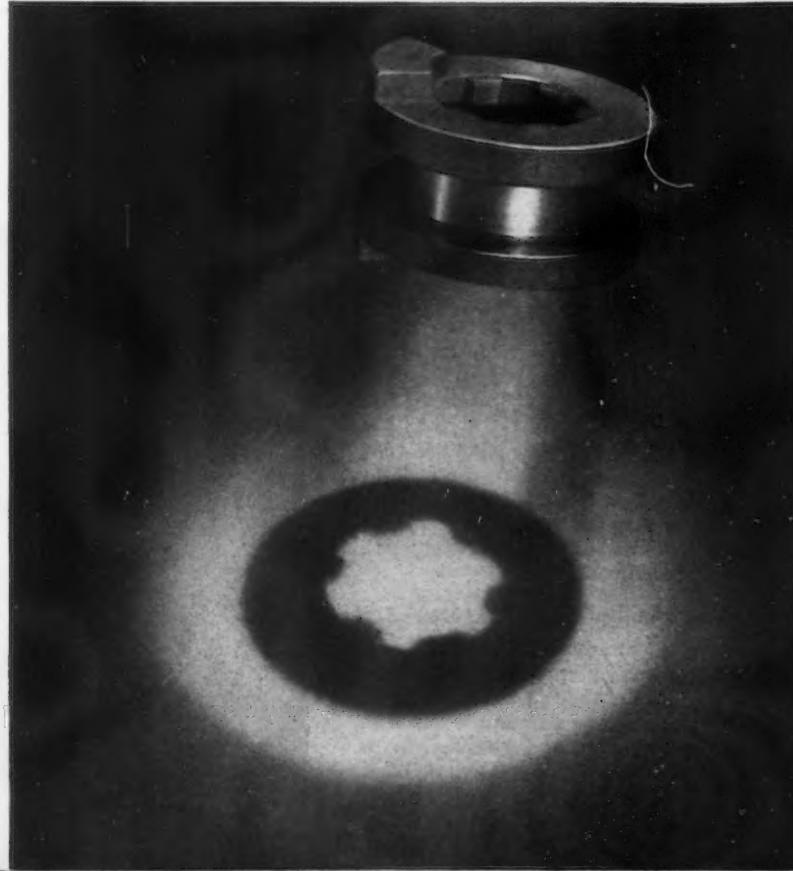
DETROIT

BUFFALO



ROUBLE SHOOTERS are the unsung heroes of every great communication system. Low in rank, as far as position is concerned, but high in responsibility in maintaining service, these men brave every hardship and hazard to keep the lines open. They have their counterpart in the steel industry—the expert metallurgists and mechanical engineers who devote their lives to the study of steel—and who "know the answers" to problems in the fabrication and application of steel products. To users of Cold Finished Steels, B & L engineers offer a technical service backed by nearly a half century of experience. They can help you improve your methods by "spotting" sources of trouble in your production—and then develop the proper steel to do a better job.

In this example of "steel diagnosis," an intricate machine part had given trouble, both by excessive failures in service, and by heavy rejections in manufacture. As the result of a survey, B & L engineers recommended a Cold Drawn Alloy, SAE 2350 Turned, Polished and Annealed. All difficulties now overcome, with a saving many times the price differential.



## BLISS & LAUGHLIN, INC.

HARVEY, ILL.      Sales Offices in all Principal Cities      BUFFALO, N.Y.

Cold Drawn Bars • Special Sections  
Ground Shafting • Extra Wide Flats  
Ultra-Cut Steel • Alloy Steels

## New Brunorizing Furnace At Gary Works

MORE than 200 railroad executives and business leaders visited the Gary Works of the Carnegie-Illinois Steel Corp. on March 10 to attend the formal inspection of the new Brunorizing furnace in the plant's rail mill. The new furnace is the result of more than 25 years of research. In it, rails, as delivered from the mill, are given a controlled thermal treatment, resulting in greater ductility and higher resistance to impact. The furnace has a capacity of 70 gross tons of steel rails per hour.

The first of its kind ever installed in the United States in a rail mill, the furnace is 250 ft. long and 9½ ft. wide. A charge of from five to eight rails enters and another leaves at uniform intervals of from three to five min. Each rail in its journey through the eight automatically controlled heating zones remains in the furnace from 18 to 30 min., depending upon the section of rail and the number of rails in the charge. The rails move automatically over specially constructed alloy rollers from zone to zone. This new furnace, together with the method of end-hardening rails by means of jets of compressed air, produces a rail of superior quality, designed to meet the constantly increasing stresses imposed by modern rail traffic. It is the latest step in the modernizing program begun in 1930 in the company's plants in the Chicago area, and carried out throughout the last six years, to keep production and quality abreast with trade requirements.

### Big Building Program

Recent announcement of a large-scale building program at Pittsburgh is another of these steps in the modernizing campaign. It constitutes the second chapter of a development begun at Gary Sheet and Tin Mills of Carnegie-Illinois Steel Corp. and carried on continuously during the depression years.

A second five-stand tandem, cold reduction mill, which will bring the rated capacity of the company's Gary Tin Mill to 300,000 tons of cold reduced tin plate annually, has been put into operation recently, as one of the improvements in this modernizing campaign.

This new cold reduction mill is similar to one which was placed in service in July, 1936. Combined with two earlier cold reduction units and with the producing old

style hot mills still in service, these new mills will give the company a total annual producing capacity of 450,000 tons of tin plate or an average of a million and a half sheets of tin plate daily. Although gigantic in size and output, these mills are capable of producing tin plate down to 0.005 in. in thickness, or one-quarter of the thickness of an ordinary bond paper letterhead.

One of the earliest accomplishments of this modernizing program was the construction during 1930 of what was at that time the world's largest continuous plate mill at the South Works in South Chicago. A four-high continuous plate mill turning out long lengths of light plate in widths up to 87 in., it was the first of its kind ever built for handling light plate of this width. It marked a great step forward in the technical perfection of steel-finishing equipment, making possible production of steel plate of more uniform gage with a sur-

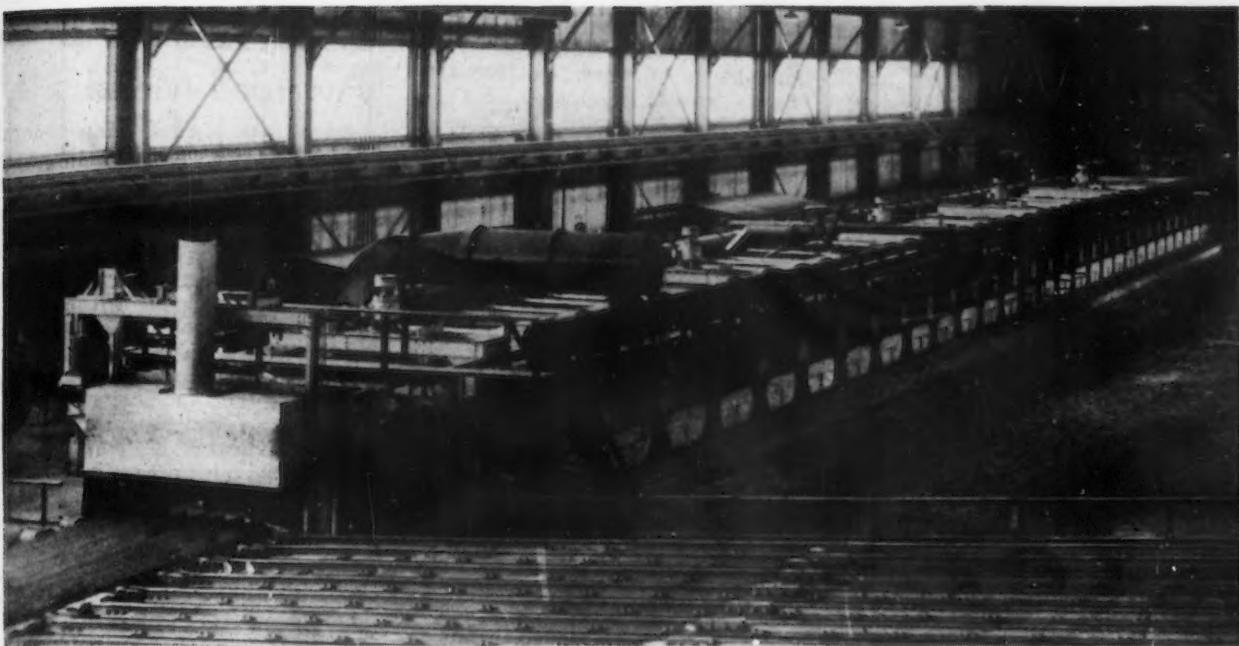
face superior to that produced on older style mills. It also makes possible the production of coiled products for cold reduction in widths greater than any previously produced in this grade. Adoption of this type of equipment throughout the steel industry since its installation, by this United States Steel Corp. subsidiary is a definite indication of its value as a pioneering enterprise.

### Flat Strip

Early in 1935, as the result of a survey of possible markets and plant facilities, the company modernized its facilities for the manufacture of flat strip steel by changing the 28-in. two-high strip mill at the Gary Steel Mill to a 38-in. mill of the four-high type, which meant virtual reconstruction of this mill. This mill now has the capacity to produce 400,000 tons of strip per year. At the Gary Sheet Mills, two new reversing cold reduction mills were completed early in 1935, and a new three-stand tandem cold reduction mill was put into operation in July, 1936. These mills turn out sheet steel of accuracy and high forming quality which finds wide use in the manu-

# BEWARE OF THE MACHINE





facture of automobile bodies, mechanical refrigerators, steel furniture, washing and ironing machines, sheet steel kitchen stoves and similar products.

In March, 1936, the company

placed a new 80-in. continuous hot strip mill in production at the Gary Sheet and Tin Mills. Housed in buildings approximately 300 ft. wide by 2200 ft. long, the mill was built on made land on the shore of

Lake Michigan. Although its rated capacity is 60,000 tons per month, it has already, on several occasions, exceeded this production rate and has turned out as much as 66,000 tons per month.

The new Brunorizing furnace was built to produce rails which keep pace with modern railroad improvements in power, equipment and speed. Each of the important advances made by railroads, future as well as present, imposes greater stresses, greater loads and greater dependence on the rail. Increased power is required to start longer trains, to haul heavier loads and to start and stop more rapidly. Under the locomotives' drivers, this increased power and friction cause higher stresses in the railhead.

The new furnace, together with a method of end-hardening rails by means of jets of compressed air, produces a tougher rail, designed to meet these constantly increasing stresses. Rails, as delivered from the mill, are given a controlled thermal treatment, resulting in greater ductility and higher resistance to impact. A charge of from five to eight rails enters the furnace at uniform intervals of from three to five minutes, and travels through eight automatically controlled heating zones. The rails move automatically over special alloy rollers from zone to zone. They enter and are discharged automatically when they have finished their journey through the furnace.

Although the operation of the furnace is entirely automatic, officials of the company point out the fact that this furnace does not eliminate workers. Rather, because

## THAT'S "Getting out the work"

IT may work as well as the day you bought it a few years ago.  
*But that's not good enough.*

A modern Warner & Swasey Turret Lathe produces 30% more than 1929 machines, with far more precision, and can combine as many as 5 operations into 1, with less effort on the part of the operator.

### ONE OF A HUNDRED CASES

One shop had a lathe seven years old. Job time was 4.2 minutes. With a new Warner & Swasey Turret Lathe, job time was cut to 1.5 minutes.

There is very likely just as good a chance to save, in your operation today. We're prepared to search it out. No obligation. Just write

**WARNER  
&  
SWASEY**  
Turret Lathes  
Cleveland

it is an added process, production of Brunorized rails creates additional employment in the rail mill. In this connection it is interesting to note that new processes and new products developed to meet exacting demands of consumers, are constantly increasing employment.

For example, the manufacture of a ton of steel in 1929 required 30 man-hours of work. In 1935 this figure was 33 man-hours, and the trend is still upward. In some of the highly finished branches of steel manufacture as many as 54 to 55 man-hours are required.

## J. G. Marshall Awarded Medal

JAMES G. MARSHALL, general superintendent of the Niagara and Welland plants of the Union Carbide and Electro Metallurgical companies, has been awarded the Jacob F. Schoellkopf Medal for 1937, it is announced by the Western New York section of the American Chemical Society. Established in 1931, the Schoellkopf medal recognizes and rewards outstanding achievement in industrial chemical research or administration in the Buffalo - Niagara Falls territory. This year's award is a tribute to



J. G. MARSHALL

Mr. Marshall's notable technical contributions to the calcium carbide and ferro alloy industry, his efforts in behalf of civic betterment, and his unceasing interest in the improvement of working conditions.

Technical developments by Mr. Marshall include a reciprocating drag conveyor adapted to abrasive materials, and further development of an electric furnace from which carbide could be tapped in liquid form. Mr. Marshall's contributions to the methods and machinery of acetylene generation from calcium carbide have been of importance to other synthetic chemical industries.

Following his graduation from Pennsylvania State College in 1896, Mr. Marshall was employed as a meter reader for the Acetylene, Light, Heat & Power Co., and later by the Union Carbide Co. In 1903 he became superintendent of smelting, then assistant superintendent and, finally in 1913, superintendent. In 1927 he was made district superintendent of the Niagara and Welland plants, and in 1921 was appointed to his present position of general superintendent of all operations of the Union Carbide Co. and the Electro Metallurgical Co., an associate of the Union Carbide & Carbon Corp.

**a tauter  
blade means  
a straighter  
cut.**

On any hack sawing machine, a tauter blade means a straighter cut . . . a High Speed Steel cutting edge means faster cutting . . . and an *un-breakable* blade guarantees uninterrupted production and a full cutting life.

MARVEL High-Speed Edge Hack Saw Blades offer all of these factors—permit cutting speeds, feed pressures, and blade tensions limited only by the sawing machine's capacities.

**ARMSTRONG-BLUM MFG. CO.**

"The Hack Saw People"

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Write for Circular

# MODERNIZATION IN THREADING . . .

The No. 11 Machine, cutting machine threads  $\frac{1}{4}$  to  $1\frac{1}{2}$ " and from  $\frac{1}{4}$  to 1" pipe, comes in the Single and Double Head types.

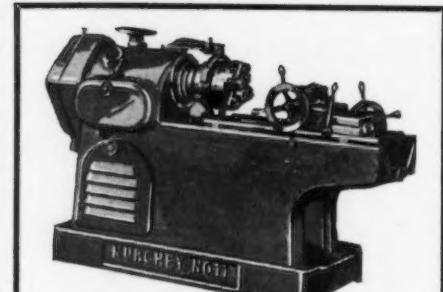
The No. 22, a larger machine, cutting machine threads  $\frac{1}{4}$  to  $2\frac{1}{2}$ " and from  $\frac{1}{2}$  to 2" pipe, also is built in the Single and Double Head types.

Machines are equipped to use tangential type chasers.

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**MACHINE & TOOL CO.**

951 Porter Street • Detroit, Michigan

*Collapsible Taps, Self Opening Die Heads; Bolt Threading, Pipe Threading and Pipe Cutting Off Machinery.*



All machines embody the following features:

1. Pre-loaded roller bearings throughout.
2. Motorized machines with motor placed in bed of machine.
3. Speeds adjustable between 72 and 386 RPM.
4. Lead Screws optional.

## Foundrymen Announce M. I. T. Program

A CONFERENCE of unusual interest to New England foundrymen and engineers will be held April 9 and 10 at Massachusetts Institute of Technology, Cambridge, Mass. This two-day meeting, held under the auspices of the New England Foundrymen's Association, the American Foundrymen's Association and the Massachusetts Institute of Technology, will be devoted to the presentation of discussions dealing with problems of design of castings and certain casting production methods. Nationally known speakers have been secured to lead the discussions of the various sessions. As several of the sessions will be devoted to engineering aspects of casting design, members of the Boston sections of the several national engineering societies are being invited to participate.

During the first morning session, April 9, a paper entitled "Casting Design—Iron" will be presented by E. M. Phillips, of the General Electric Co. In the afternoon the following papers will be presented: "Casting Design—Steel," by V. T. Malcolm, of the Chapman Valve Co.; and "Physical Testing and Laboratory Demonstration," by Prof. J. M. Lessells, of M.I.T. In the evening there will be a dinner at Walker Memorial Hall, and the speakers will be Dr. K. T. Compton, president of M.I.T., and D. M. Avey, secretary of the A.F.A. Marwin Horr, of M.I.T., will give a demonstration of high speed photography.

The technical sessions on April 10 will include the following papers: "Molding Sand Control," by W. G. Reichert, of the Singer Mfg. Co.; "Sand Testing Technique and Demonstration," by Earl E. Woodliff, H. W. Dietert Co.; and "Cupola Operation," by D. J. Reese, International Nickel Co.

## Jury Picked for Bridge Design Awards

A JURY of nationally known engineers and architects has been named to select the prize-winning designs in the ninth students' bridge design competition, which is held by the American Institute of Steel Construction annually. The jury consists of Dr.

D. B. Steinman, consulting engineer; Jay Downer, consulting engineer; Kenneth M. Murchison, architect; Alfred Fellheimer, architect, and F. E. Schmitt, editor of *Engineering News-Record*.

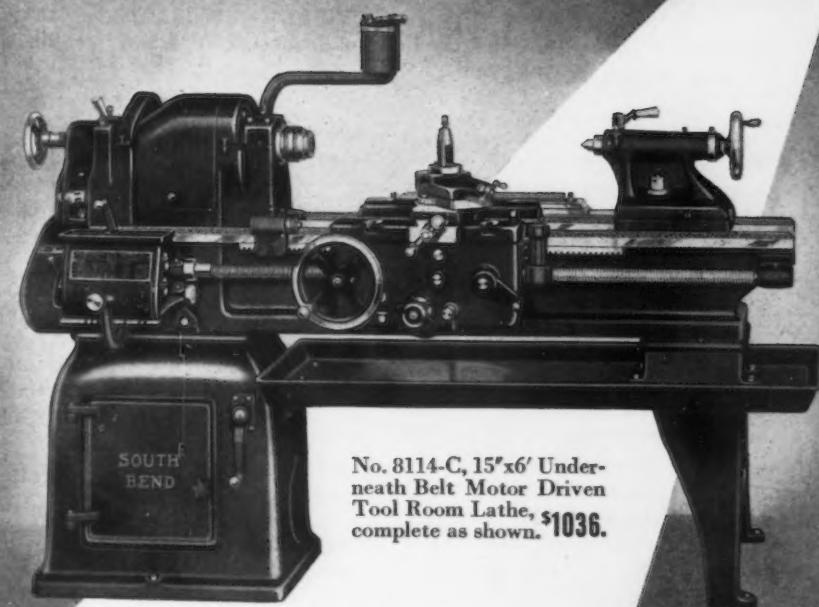
The competition is open to all students of engineering or architecture registered in technical schools, colleges and universities of the United States. From the designs submitted, three will be selected to receive prizes of \$150, \$100 and \$50. The jury will meet

on April 20, to make these selections.

The problem is to design a highway bridge to carry a roadway in a straight line over a stream 300 ft. wide, bank to bank, connecting a parkway on the high land to the south, with a boulevard on the plateau to the north. The proposed bridge would have four lanes 40 ft. between curbs, with one 5-ft. sidewalk.

Competitors must submit their designs on or before April 12.

## NEW 1937 SOUTH BEND *Precision* LATHES



No. 8114-C, 15' x 6' Underneath Belt Motor Driven Tool Room Lathe, \$1036, complete as shown.

THE new 1937 Series of South Bend Back-Geared, Screw Cutting Precision Lathes with Double Wall Aprons and hardened and ground headstock spindles are recommended for the finest and most accurate work in the tool room, machine shop, manufacturing plant, and laboratory. Offered in sizes from 9" to 16" swing, in bed lengths from 3' to 12', Underneath Belt Motor Drive, Countershaft Drive, and Pedestal Motor Drive.

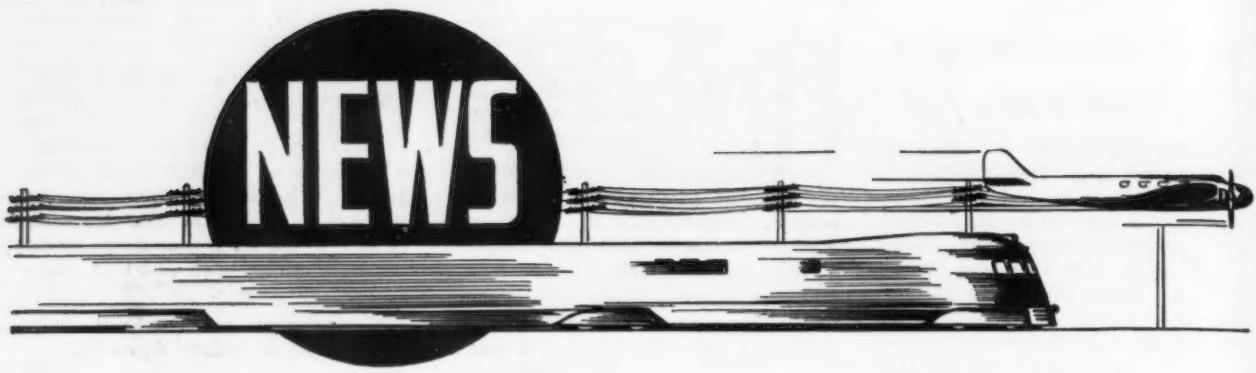
**SOUTH BEND LATHE WORKS**  
659 East Madison Street  
South Bend, Indiana, U. S. A.



### WRITE FOR NEW CATALOG

Catalog No. 96 illustrates, describes, and prices the new 1937 Series of South Bend Precision Lathes in all sizes and styles. A valuable book for the shop man, engineer, and plant executive. Sent free, postpaid, upon request.

**MODERN LATHES FOR MODERN INDUSTRY**



## What Is It All About?

Does the Carnegie-Illinois agreement with Lewis portend the "closed shop" in the steel industry?

Does it mean a tardy and forced acceptance of the principle of collective bargaining?

Or does it mean that the public can have what it wants, provided it is willing to pay for it?

LAST week, THE IRON AGE was among the first to announce the rather startling news that the Carnegie-Illinois Steel Corp. had afforded recognition to the CIO. Since then, events have moved swiftly in the direction of general pay and price rises throughout the steel producing industry; more swiftly and with greater effect, indeed, than in any similar period in the last two decades.

Newspaper headlines and stories have characterized these events as a substantial victory for Mr. Lewis, for the Administration, for the cause of social justice and of course, fundamentally, for the so-

called "forgotten man" who shovels ore, carries pigs of iron or earns his bread by the sweat induced by heat plus physical labor.

This week, THE IRON AGE records a broader and more substantial upward movement of steel prices, for practically all commodities, than any that has taken place since 1922-23. It also records the acceptance, by a large part of the steel industry, of the 40-hr. week.

All of this has removed the probability of the threatened steel strike. It has not removed the more distant but perhaps more fundamental threat of a passive strike by consumers of steel when the

final bill is presented to them for payment.

### What Brought it About?

It is not difficult for one who has followed the course of recent labor history to perceive the conditions that have brought about these results. All one has to do to understand it is to recall recent events in the automotive industry. Public sentiment was distinctly against the seizure of General Motors' plants by the minority of sit-down strikers. So, too, were the laws of Michigan regarding property rights. Both of these were overruled by Federal and State political pressure. Thus, after winning the battle at a cost of hundreds of millions of dollars in profits and wages, General Motors was forced to accept the loser's position through the decision of political umpires and referees.

The situation in Pennsylvania was equally disadvantageous to anyone called to take issue with John Lewis, the fair-haired labor leader of the Federal and State administration. A battle in steel would have cost more millions than the battle in motors. And, un-

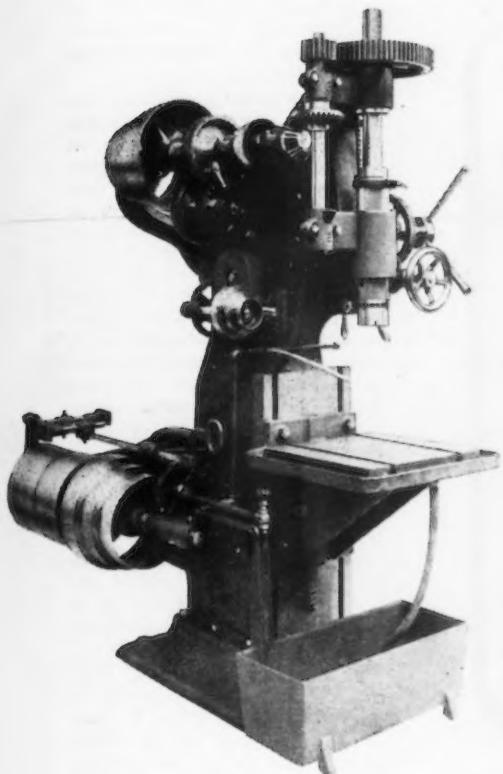
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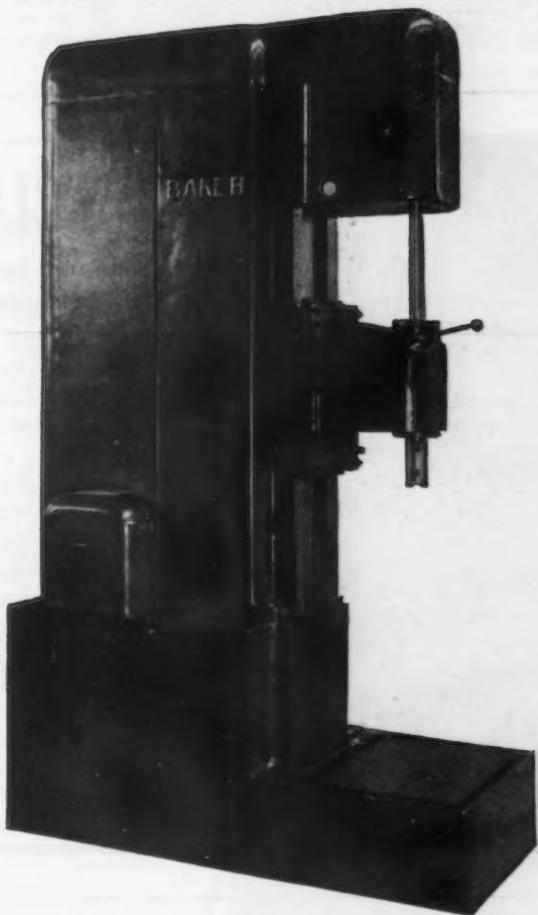
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# PROGRESS

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**1886—STYLE "F" DRILL**



**1937—10-HO CLEANLINE DRILL**

## **51 YEARS OF DEPENDABLE SERVICE**

The 10-HO CLEANLINE is a modern machine typifying the constant developments and improvements in Baker products in the past 60 years. The "F" drill was just as advanced in 1886 as the CLEANLINE is today. For equipment offering the maximum in production efficiency and lower costs, check Baker Brothers, Inc., Toledo, Ohio, for drilling, boring, tapping and keyseating operations.

**\* BAKER \***

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fortunately, the larger burden would have been upon the wages of the loyal employees who desired no strike and who probably still outnumber the CIO contingent three to one. A majority without a voice.

In all probability, given the same political setup in Pennsylvania as in Michigan, the outcome of a battle between Steel and Lewis would have had the same outcome. Con-

sideration of this fact, together with the tremendous losses which might have accrued to stockholders and loyal labor, may have had its influence upon Carnegie-Illinois management in making its recent move.

#### A Closed Shop for Steel?

When one reads the terms of the Carnegie-Illinois agreement with

the SWOC, the terms do not indicate such a sweeping victory for Mr. Lewis as his henchmen, political and otherwise, and some newspaper accounts would indicate. It does not mean a "closed shop" for steel by any means. Witness the following terms of the Carnegie-Illinois agreement:

This agreement dated March 2, 1937, between Carnegie-Illinois Steel Corp. and the Steel Workers Organizing Committee on behalf of the members of the Amalgamated Association of Iron, Steel and Tin Workers of North America, employed by the Corporation.

1. The Corporation recognizes the Steel Workers Organizing Committee, or its successor, as the collective bargaining agency for those employees of the Corporation who are members of the Amalgamated Association of Iron, Steel and Tin Workers of North America (hereinafter referred to as the Union). The Corporation recognizes and will not interfere with the right of its employees to become members of the Union, or its successor. There shall be no discrimination, interference, restraint or coercion by the Corporation or any of its agents against any member because of membership in the Union, or its successor. The Steel Workers Organizing Committee, or its successor, agrees not to intimidate or coerce employees into membership or to solicit membership on Corporation time or Plant property.

2. Effective March 16, 1937, there shall be an increase in wages of 10 cents (10c.) an hour on all rates which are at present \$4.20 a day, or a minimum for this classification of \$5 a day of eight (8) hours. Such classifications now receiving less than \$4.20 per day, or less than 52½c. per hour, shall be increased ten cents (10c.) per hour. All other classifications shall be equitably adjusted in accordance with the provisions of Section 4 of this agreement.

3. Effective March 16, 1937, there shall be established an eight (8) hour day, forty (40) hour week. Time and one-half shall be paid for all overtime in excess of eight (8) hours in any one day and for all overtime in excess of forty (40) hours in any one week.

4. A joint committee representing the Carnegie-Illinois Steel Corp. and the Steel Workers Organizing Committee shall meet not later than March 10, 1937, for the purpose of effectuating a written agreement on working conditions, application of wage rates, hours, rules and a method of adjudication of disputes arising under the terms of the agreement, and which agreement shall incorporate the terms of this agreement.

5. The agreement effectuated

The "CLINCHOR"  
Feeds and Sets CLINCH NUTS  
Automatically

A NEW TYPE of machine answering the demands for better production methods for setting Clinch Nuts.

The clinch nut, which has been automatically placed on the anvil, locates the work. The ram coming down sets the clinch nut.

May we send you a circular describing the many details so important for successful production?

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628 N. Mechanic St., Jackson, Michigan  
European Office  
GASTON E. MARBAIX, Ltd., Vincent House,  
Vincent Square, London, S. W. 1, England



## This is a WELLS METAL CUTTING BAND SAW

You'll find it the perfect all-around saw for cutting metal—in any shape. It cuts duplicates with precision. Handy—fast—you can move it around the plant to wherever it's needed. An inquiry will bring more details of Wells Band Saw Advantages.

**WELLS**  
MFG. CORP.

THREE RIVERS, MICHIGAN

pursuant to Section 4 hereof, shall be in force until Feb. 28, 1938.

**CARNEGIE-ILLINOIS  
STEEL CORP.**

*By B. F. Fairless,  
President.*

**STEEL WORKERS ORGANIZING COMMITTEE**

*By Philip Murray,  
Chairman;  
David J. McDonald,  
Secretary-Treasurer;  
Van A. Bittner,  
Director, Western  
Region;  
Clinton S. Golden,  
Director, North-  
eastern Region;  
Lee Pressman,  
General Counsel.*

Unlike the situation in General Motors, in which a supplementary letter from the management agreed not to bargain with any other group for six months, Carnegie-Illinois Corp. stated its position as follows:

"The policy of the Carnegie-Illinois Steel Corp. with regard to collective bargaining with its employees remains unchanged. As previously stated on many occasions, the company recognizes the right of its employees to organize and bargain collectively through representatives of their own choosing.

"The company will recognize any individual or group or organization as the spokesman for those employees whom they represent, but will not recognize any single organization or group as the exclusive bargaining agency for all the employees.

"Under this policy the status of the employee representation plan is likewise unchanged. It will continue as the spokesman for those of the employees who prefer that method of collective bargaining which has proved so mutually satisfactory throughout its experience."

**Employees Have Something to Say Too**

An interesting situation has developed in the Carnegie-Illinois company, subsequent to the company's agreement with the SWOC. Members of the Employees Representation Plan, supposedly representing a majority of the labor in that company, do not seem anxious to be represented by the Lewis contingent. Rather than that, they give evidence of a desire to flirt with A. F. of L. leadership. While their recent invitation to William Green, to come to Pittsburgh to advise them was refused, they have within the last two days turned to John Fry, head of the A. F. of L.

metal trades division. What will come of these negotiations no one knows, but it is possible that they may form the means of providing the A. F. of L. with the possibility of checking John Lewis that it is purported to desire.

**Republic Insists on Open Shop**

Outside of the corporation, other steel producers have shown no immediate intention of recognizing

the SWOC. The attitude of the independents is probably expressed by Tom Girdler, president of Republic Steel Corp., who has issued the following statement:

"The policy of this company has been, and is now, that it will meet with any person or persons, or organization, and will bargain with them for whomsoever they represent.

"If any union or organization



Keep your tools sharp the easy, speedy, dependable way with LeBlond Universal, consistently accurate, precision Grinders, that will grind any face on any shape cutter, faster, better, more economically, and get tools back in production without delay.

Rugged, simple in design, completely protected against emery dust, every operating part of LeBlond No. 1 and No. 2 Grinders is built to give extra years of trouble-free service; to effect genuine savings in grinding costs and return the greatest value per dollar invested.

**Literature will be sent on request.**

Write for illustrated brochures containing complete specifications of LeBlond No. 1 and No. 2 Grinders.



For grinding all kinds of cylindrical, internal, face and angular work—face mills; end mills; reamers; counter bores; circular saws; snap gauges; internal gauges; gear cutters; rose reamers; adjustable blade reamers; flat surfaces; formed cutters, cylindrical or flat; jig bushes; mandrels; all tool room grinding.

**The R. K. LE BLOND  
MACHINE TOOL CO., CINCINNATI, O.  
20 North Wacker Drive, Chicago      103 Lafayette St., New York  
HALF CENTURY OF SERVICE TO INDUSTRY**

claiming to represent any of our employees asks for a conference with our company, we will meet and bargain with them for whomsoever they represent. This is in conformity with our general policy as stated above.

"Likewise, we will continue to meet and bargain with the employee representatives for the employees whom they represent.

"We repeat the statement which we made to you last July. Republic stands for the open shop principle. No employee has to join any organization to get or hold a job."

Estimates as to the additional number to be employed by the adoption of the 40-hr. week are likely to be somewhat "cockeyed." This is indicated by the attitude of Carnegie-Illinois employees who do

not see any "percentage" in working less hours per week at higher pay and yet receiving a smaller pay envelope than previously. It is understood that an agreement has been made that instead of employing more men the present force will be permitted to work overtime and thus earn more money. Simple arithmetic will show that an increase from 52c. to 62c. per hr., is not sufficient to produce a wage envelope on a straight 40-hr. week as large as that earned at the lesser pay for 48 hr.

#### Price Increases

The increases in prices in the industry this week go "clear across the boards." There is scarcely a quotation among the many hundreds recorded in this journal that has not received a boost this week. Naturally, it could not be expected that an industry, just recovering from a three-year deluge of red ink, could absorb the increased labor costs. They are being handed on to the consumers, just as all forced cost increases must be. Unfortunately, the greatest burden of these and other increased costs will eventually fall upon the wage earner, for such men and women constitute the bulk of America's purchasing power, whether it be for steel or bacon and eggs.

The moral of all this seems to be that the public gets what it wants, but does not always want what it gets after it gets it.

## ★ Specialists in Alloy and Tool Steel **TUBING**

Our concentration on tubing enables us to give customers the benefit of our special skill and experience. Large stocks available for immediate shipment—Tool Steel Tubing, Ball Bearing Tubing, Stainless Tubing, Aircraft Tubing, Hypodermic Tubing, Cold Drawn Mechanical Tubing, A.S.M.E. Boiler Tubing.

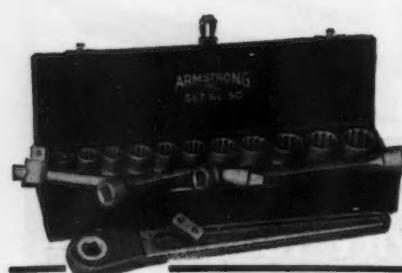
*May We Serve You?*

**THE BISSETT STEEL COMPANY, Cleveland, O.**  
The Tubing Specialists

# ARMSTRONG

Chrome-Vanadium Sockets and Wrenches

Only  
**ARMSTRONG**  
has the  
Drivelock



### Detachable but RIGID!

ARMSTRONG Socket Wrenches offer all of the advantages of quick assembly; drivers, handles, extensions, ratchets—the full range of sizes and in addition rigidity.

With the patented Drivelock ARMSTRONG has brought socket wrenches up to industrial standards of strength and safety. A quarter turn of the lock pin locks socket to driver, driver to ratchet, extension to extension. Build up a tool of any length—each unit locks securely to the others. Regardless of size or shape this "1-piece" assembly will not pull, pry or knock apart.

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### Pittsburgh Company Orders Four Freighters

CONTRACTS for four lake bulk freight boats have been awarded by the Pittsburgh Steamship Co., the lake ore and coal carrying subsidiary of the U. S. Steel Corp. Two will be built by the American Shipbuilding Co. at Lorain, Ohio, and two by the Great Lakes Engineering Works at Ecorse, Mich. The boats will be 606 ft. over all, 60-ft. beam, 32-ft. depth, 22-ft. draft of 12,000-ton capacity. Innovations will include the substitution of electro turbine propulsion for reciprocating engines and electric drive for all the principal auxiliaries. These boats are expected to have a speed of 14 miles per hr., or two or three miles in excess of most lake freighters. They are scheduled for completion in April next year. This is the first major ship construction work to be undertaken on the Great Lakes since 1930.

## New 4-Strand Rod and Bar Mill for Bethlehem Steel Co.

In conjunction with its building and improvement program that was made public in November, 1936, the Bethlehem Steel Co. now announces plans for a new four-strand rod and bar mill and also increased wire drawing and finishing capacity at its Maryland plant, at Sparrows Point, Md.

The new mill will be located adjacent to the present rod mill, and will be tied in as a major unit in the Maryland plant's existing rod and wire finishing facilities. It will use a common billet storage yard and deliver its rod products into an enlarged drawing and finishing unit, which will be served also in part by the rod capacity of the present mill.

In the high-speed, four-strand mill that the plans call for, four billets, rather than two, as in the present two-strand mill, can be passed through the roll stands at one time. Also, the new four-strand mill will be operated at a higher speed. Its capacity can be rated at over 20,000 tons per month, almost double that of the existing mill.

### Bar Finishing Facilities Provided

Among the other innovations in the layout will be facilities for finishing bars, as well as rods, in a separate building primarily designed for the production of reinforcing bars, which, incidentally, have not heretofore been produced at the company's Maryland plant. However, the greater part of the product of the new mill will be converted into rods, both to meet the growing demands of manufacturers who draw upon Bethlehem as a source of rod supply, and to meet the greater demands of the enlarged wire drawing capacity and finished wire products capacity.

This increased wire drawing capacity with the more ample source of rod supply that the new mill makes available will also allow for the increase that is being provided for in output of finished wire products, such as nails, barbed wire and bale ties, already important items of manufacture at this plant.

### Expedite Water Shipments

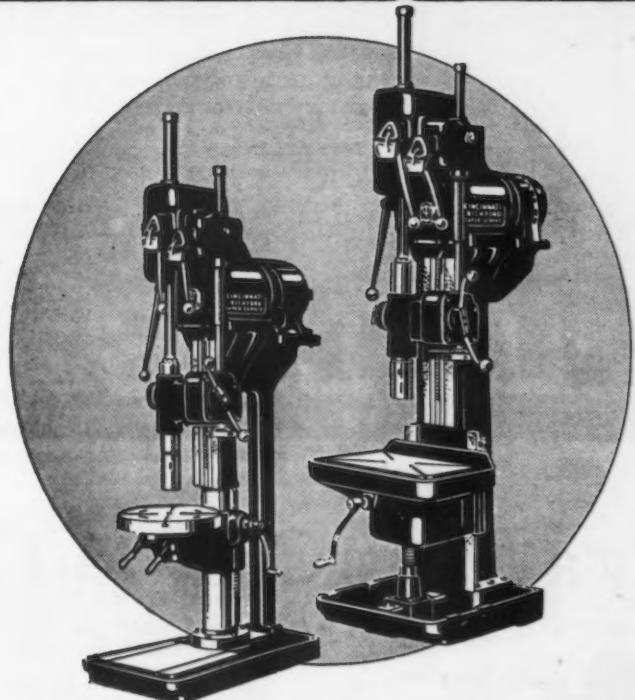
Due to the tidewater location of the Maryland plant, the increased capacity will be of especial advantage to Bethlehem in expediting water shipments to the Atlantic seaboard, Gulf and Pacific Coast States. Included in the new unit are warehousing and bar fabricat-

a nearer and more adequate source of supply of this product through the company's present warehousing and fabricating facilities in Philadelphia and New York.

The cost of the new mill and enlarged facilities has not as yet been determined with exactitude, but it is a part of the \$35,000,000 program that was announced in 1936.

The approximate additional employment that will be provided by the enlargement of the rod and wire

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# CINCINNATI BICKFORD

mill will be 500 men. This is in addition to some 2000 new jobs that have in part already been created at the Maryland plant as a result of the program that is being carried out for increasing tin plate, and flat-rolled steel products capacity, including the erection of a 56-in. continuous strip-sheet mill. It is expected that the construction work will be completed in the early

fall and the new plant will be in operation shortly thereafter.

Arrangements have already been made with the Consolidated Gas, Electric Light and Power Co. of Baltimore for additional power supply, and a new transmission line is projected and under construction.

With the completion of other miscellaneous improvements and betterments now in process, the Mary-

land plant will have a steel ingot capacity of upward of 200,000 tons per month and modern facilities for a full line of products in rods, concrete reinforcing bars, wire, pipe, plates, skelp, rails, sheet, strip and tin plate.

## Contract for High Pressure Wind Tunnel

A GOVERNMENT contract for the construction of a high pressure wind tunnel at Langley Field, Va., for aeronautic experimental work, has been awarded to Pittsburgh Des Moines Steel Co., Neville Island, according to J. E. O'Leary, general sales manager.

The project, under the supervision of the National Advisory Committee for Aeronautics, is the first of its kind in the country. It will cost approximately \$1,000,000. The tunnel when completed in 1938 will be used to advance the Government's knowledge of aerodynamics in relation to airplane design and construction.

The cylindrical tunnel arranged in rectangular fashion will have a total length of 380 ft. Diameter will vary from 19 to 54 ft. at its widest point. A wind velocity of 200 miles per hr., or 17,600 ft. per min., will be created within the tunnel by means of a thirty ft. multi-blade propeller, driven by a specially designed electric motor of 8000 hp. The effect on model planes tested in this tunnel will be that of a 400 m.p.h. gale. All welded construction with steel plates ranging from  $\frac{1}{8}$  in. to 2 in. in thickness will be used.

Approximately 2000 tons of steel and 25 miles of welding will be required by the structure.

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## New Stainless Cars for The Santa Fe Railroad

THE Edward G. Budd Mfg. Co. has announced an order for 52 light-weight stainless steel passenger cars from the Atchison, Topeka and Santa Fe Railroad.

The 52 cars which will embody the newest designs in railroad passenger equipment, will include 30 passenger coaches, 10 dining cars, 6 club lounges and 6 club baggage cars.

The Santa Fe announced this order to the Budd Company with the explanation that it was a part of the road's improvement program which will include the purchase of new passenger equipment, new steel rail, locomotives and freight cars.

# New York Transport Problems Require Large Steel Tonnages

THE ever-increasing population of New York City and its environs, and the necessity for improving existing means of carrying people to and from the business sections of the city, have made the various transportation boards important consumers of steel.

Work is now in progress on midtown tunnels under both the Hudson and East Rivers, an East River Drive is being developed, construction of the elevated highway on the West side, and the Sixth Avenue subway is well underway, and in the past few weeks proposals for the construction of two additional transportation systems, a tunnel from the Battery to Hamilton Avenue, Brooklyn, and the development of a unified rapid transit system linking Northern New Jersey with Manhattan and Staten Island, were submitted in reports to the proper authorities.

Work on the south tube of the Midtown Hudson Tunnel is nearing completion, while construction is not so far advanced on the north tube. The two tubes together have consumed more than 13,000 tons of structural steel and 5500 tons of reinforcing steel, with the north section expected to require a considerable additional amount in later stages of construction. The Queens Midtown Tunnel is just getting started, and bids are to be taken in about a month on 4000 tons of shapes and 1400 tons of reinforcing bars for the under-river contract. This project is to link Borden Avenue, Queens, with Second Avenue, Manhattan, at 36th Street.

About 200 tons of reinforcing bars and 3000 tons of sheet piling is out on inquiry for the first section of the East River drive which is proposed to extend along the entire waterfront from Grand Street to the Triborough Bridge sector, and is to consist of two 32-ft., three-lane drives, separated by an ornamental center mall. The development of a water-front park from Grand to 14th Street, and several smaller parks and playgrounds further up town is also planned.

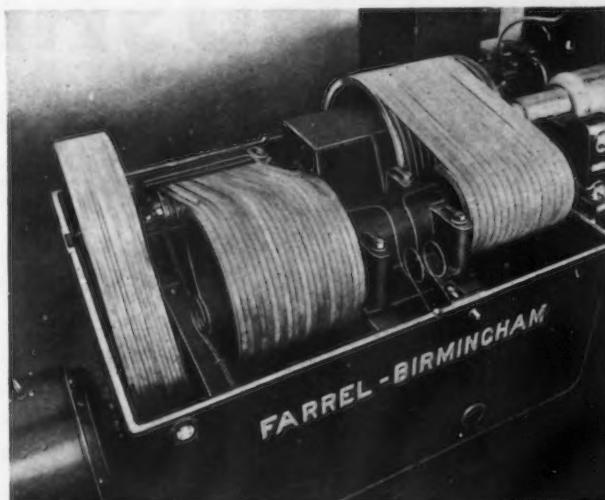
The elevated highway along the west side of Manhattan has been the heaviest single consumer of steel in recent transportation construction, a total of more than 60,000 tons of structural steel and 6400 tons of reinforcing bars having been required in the past two years. Work is steadily progress-

ing on the latest section of the project, which extends from 72nd Street to the Harlem River, where a bridge has been constructed and is now in use. Much work remains to be done on this job, however, and further tonnages of steel will be ordered in the near future.

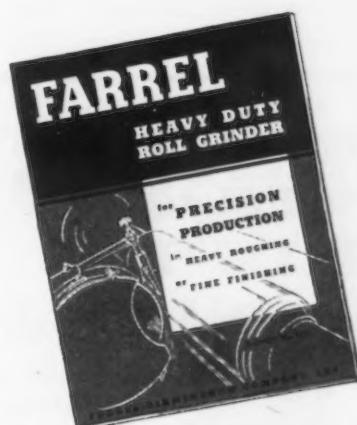
For over a year work has been progressing on the Sixth Avenue subway and to date more than 26,000 tons of shapes and 1200 tons of reinforcing steel has been required, with additional tonnages to be made necessary as the project continues.

## New Vehicular Tunnel

Complete plans for construction of the Battery-Hamilton Avenue vehicular tunnel to link lower Manhattan and Brooklyn were submitted to the Board of Estimate



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The multiple "V" belt drive of the Farrel Heavy Duty Roll Grinder is notable for its smoothness and freedom from vibrations which mark the rolls and require much time and trouble to remove. Users of Farrel machines equipped with drives of this type are getting results in improved quality of finish and increased output that had formerly been thought unattainable on any roll grinder.

The headstock is a self-contained, compact, rugged unit which will give years of trouble-free service with a minimum of attention and next to nothing for upkeep. It is mounted on the same level and in line with the grinder beds; it requires no special pit. An ample number of belts transmits all the power required to rotate any roll within the capacity of the machine.

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last week. If approval is obtained, the Federal Government will be asked for a grant, which must consist of at least \$30,000,000 of the total estimated cost of \$70,850,000, according to Fiorello H. La Guardia, mayor of New York. It is believed that 9,000,000 vehicles would use such a tunnel in the first year of operation, while capacity of 15,000,000 vehicles a year is expected to be reached about 16 years after the tunnel is opened.

The plans propose to connect the tunnel with Governor's Island by elevators large enough to accommodate trucks and buses as well as ordinary vehicles. In length the tunnel will be 10,492 ft. from plaza to plaza, as compared with 10,250 ft. for the Holland Tunnel.

Ole Singstad, chief engineer of the New York Tunnel Authority, stated in the report that business interests in Brooklyn, and particularly industrial and commercial

activities on the waterfront between Bay Ridge and Brooklyn Heights, should benefit by the tunnel since inadequate transportation facilities have been a serious handicap in the past. The opening of such a tunnel is expected to be influential in the establishment of a new residential section in Brooklyn, as well as an aid to the business districts.

A proposal which calls for the provision of "speedier and more convenient access to Manhattan" from northern New Jersey, with "rail delivery to midtown Manhattan for all New Jersey railroads, in many cases without transfer" has been submitted by the Port of New York Authority to the New Jersey legislature. The plans suggest the extension of the Hudson & Manhattan Railroad from its 33rd Street terminus in Manhattan to a new station at 51st Street, and through new tubes under the Hudson to New Durham, N. J., in Hudson County, where connections would be made with the West Shore, the Northern (Erie) and New York, Susquehanna & Western (Erie) railroads. The main line of the Erie would be electrified east of Paterson and would operate through the new tubes to the 51st Street station.

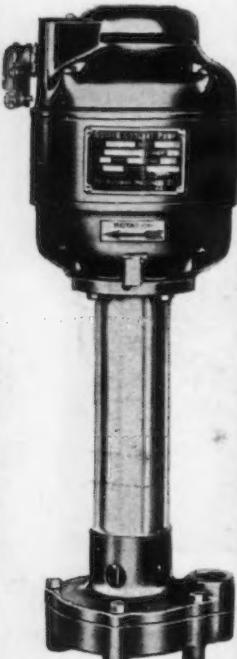
#### New Jersey Central Electrification

Electrification of the main line of the New Jersey Central is called for as well as the extension of the operations of the Hudson & Manhattan on the New Jersey Central tracks through Jersey City to Bayonne, and thence by way of the Bayonne bridge to Port Richmond, Staten Island.

The report concludes that a subsidy will be necessary if adequate rapid transit facilities be provided from northern New Jersey. The total estimated cost of the project is \$187,500,000, and the annual operating costs, interest and amortization exclusive of taxes are expected to be about \$14,290,000.

If the New Jersey project and the Brooklyn tunnel are approved, an enormous amount of steel, probably close to 100,000 tons, will be required, and steel mills, fabricators, tunnel workers, engineers, electricians, and other types of labor will be provided with employment from these projects over a period of from five to ten years.

Other large construction projects undertaken in the past year because of congested traffic conditions include the Marine Parkway in Brooklyn and the bridge connecting Marine Park, Brooklyn, with Jacob Riis Park, Rockaway, Long Island, and the Triborough Bridge which joins Queens, Manhattan and the Bronx.



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## Reliance Electric To Expand Plant

RELIANCE ELECTRIC & ENGINEERING CO., Cleveland, manufacturer of electric motors, has placed a contract for a plant extension involving an expenditure of \$60,000. The increased space will be used for manufacturing. The company recently completed an addition to provide more space for motor assembling and testing.

## Bethlehem Steel Reports to Employees

COINCIDENT with the Annual Report to stockholders, which was issued early this week, Bethlehem Steel Co. has issued an Annual Report to Employees covering wage increases, pension status, vacations with pay and other major matters affecting human factors.

While the Annual Financial Report has always been available to employees' representatives, to the thousands of employee stockholders, and to the general public through the press, the March issue of the Bethlehem Review is devoted to the Employees' Annual Report. This is responsive to many commentaries in the press and elsewhere that employees should have a special responsible accounting of the activities particularly affecting them, in addition to the general financial statistics available in the report to stockholders.

"Annual reports to stockholders and the public on the financial status of companies are customary," said E. G. Grace, president of the Bethlehem Steel Co., in the foreword to the Employees' Report. "I believe it is quite as fitting that there should be an annual audit and report on the human factors which make possible these accomplishments, especially as the employees are so directly concerned in the proper conduct and accounting of these activities."

"In our company there is a happy relationship between employees and management which has existed over these many years. We have before us the facts of practical accomplishment. With complete freedom, employees, directly and through their representatives, have continuously presented their views, have secured better wage standards, and have achieved economic betterments greater than in many industries.

"After all, this question of collective bargaining that we hear so much about these days is nothing new in the Bethlehem organization. The principle was accepted many years before it became so widely publicized and enacted into law. From the start we

have recognized that real collective bargaining must achieve a definite goal, and that goal must be to elevate the working and living standards of the employees.

"I trust that the healthy outlook for 1937 does not represent the peak of accomplishment. The trend in this country is toward an ever higher standard of living and greater earning power for each individual. It should be the goal of employees and management to operate so effectively that the productive facilities of indus-

try will support a better living standard for all."

Among the features of the report which have not been published previously are the following facts:

The plan of vacations with pay for workers in the plant, which was inaugurated last year as an experiment generally new in industry, will be continued. The cost of this to the company last year was \$1,000,000 and will run considerably higher this year.

The pension disbursements to em-



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ployees during the past year were approximately \$840,000. These funds were paid entirely by the corporation without any contribution by employees. Since the start of the pension plan in 1923 the sum of \$8,434,820 has been disbursed.

More than 16,000 employees have been added during the past year, and the total in the United States at the end of the year was approximately 86,000.

During 1936 Bethlehem experienced the best safety record in its entire history, the accident rate showing a reduction of 10 per cent from that of the preceding year. Since 1916, when organized safety activities were first begun in the corporation, accidents have declined 79 per cent.

Under the plans of employee representation effective in the different plants, there were 722 major cases adjudicated during the year dealing

with hours, wages and working conditions, of which 592 were decided in favor of the employees.

The report also includes the announcement, previously published, of the new increase of 10c per hour in the base labor rates and the new overtime schedules of time and a half for all work over 40 hours per week, and over 8 hours per day. There is also a brief report of Bethlehem's expansion in the Mid-Continent oil field through acquiring the Taubman Supply Corp. which is expected to enlarge Bethlehem markets in that territory with consequent increases in mill production and employment.

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## Central Iron & Steel Increases Wages

ROB'T H. IRONS, president of the Central Iron & Steel Co., announces that in conformity with action taken by other steel companies the basic labor rate will be advanced 10c. per hour. All other hourly, piece-work and tonnage rates will be equitably adjusted. The 40-hr. week will be adopted and time and half time will be paid for any hours in excess of eight hours per day and of 40 hours per week. These changes will be made effective March 16.

The Central Iron & Steel Co. is one of the largest manufacturers in the United States of steel for the Federal Government, particularly the Navy Department, and the requirements as set forth in the Walsh-Healey Act covering government contracts will be met by these changes. The Central company has about completed contracts for seven destroyers, three submarines and a 10,000-ton cruiser for the United States Navy, and further work of this nature is expected as the company will be bidding for additional contracts.

## Laclede Steel Announces Earnings

LACLEDE STEEL CO. reports net earnings for 1936, which marked the 25th anniversary of the company, of \$240,656, equal to \$1.17 a share of \$20 par stock, compared with \$227,350, equal to \$1.10 a share in 1935. A dividend of 90c. was paid in 1936 compared to 60c. in 1935, making a continuous record of dividend payments each year since 1912. Thomas R. Akin, president of the company, points out in a statement to stockholders.



**PERSONALS..**

J. PAUL FIFE has been elected to the newly created position of board chairman of McKeesport Tin Plate Co., McKeesport, Pa. Mr. Fife has been a director in the company for more than 10 years.

\* \* \*

W. K. COOPER has been elected vice-president and general manager of Una Welding, Inc., Cleveland, manufacturer of automatic welding equipment and welding rods. A. A. PROBECK has been named vice-presi-

joined the Army in the heavy artillery branch of the service. After the Armistice he secured employment with the Spicer Mfg. Co., South Plainfield, N. J., and was connected with various plants of that company until 1933, his last position being manager of the planning department. From the Spicer Co. he went with the New York Shipbuilding Co., Camden, N. J., as assistant general manager and re-

mained in that capacity until he joined the Una organization.

Mr. Probeck has been in the welding field for 25 years, having started in the arc welding branch of the industry with the C. & C. Electric Co., Garwood, N. J. Later he spent a number of years in the resistance welding field with the Federal Machine & Welder Co., Warren, Ohio. He was connected with the Una company from 1927



J. P. FIFE



W. K. COOPER

dent and sales manager and R. B. FEHR has been placed in charge of engineering.

After his graduation from Oberlin College in 1918, Mr. Cooper

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## WELDING TORCH

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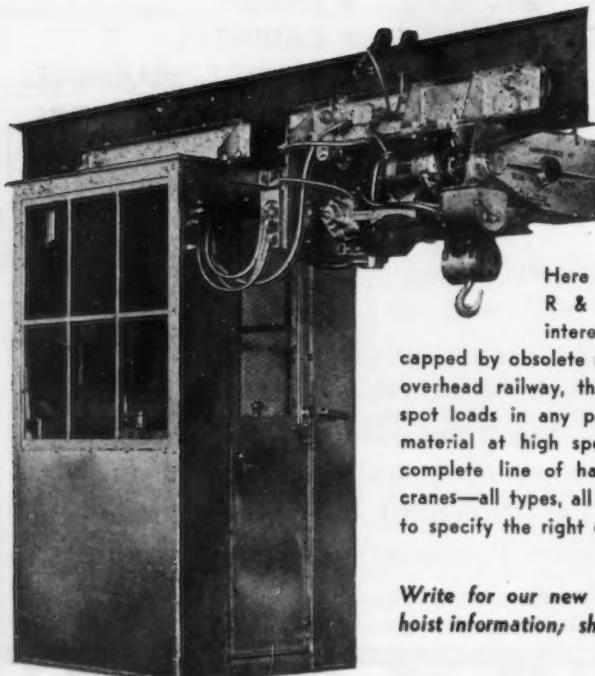
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until 1931 when he returned to the Federal company.

Mr. Fehr since his graduation in mechanical engineering from Penn State College in 1910 has spent most of his time on experimental research, commercial development of products and processes and production problems. For the past 15 years he has paid a great deal of attention to certain developments relating to arc welding and also to processes for making silent gear transmissions for automobiles. During this period he has held positions as development engineer for the Rail Welding & Bonding Co., Cleveland, and as technical director for Gear Processing, Inc., Detroit and Cleveland.

\* \* \*

CHARLES F. NEWPHER has been appointed assistant to the president of the National Screw & Mfg. Co., Cleveland. He recently resigned as manager of sales of the bolt and nut division of Republic Steel Corp. Starting in 1911 in an engineering capacity, he recently completed 25 years of service with Republic and its predecessors, the Bourne-Fuller Co. and Upson Nut Co.

\* \* \*

DAVID BLANCHARD, for the past 14 years vice-president of the Magnus Chemical Co., Inc., Garwood, N. J., in charge of the Portland, Me., office, has been appointed vice-president in charge of sales. He has been identified with the company since its inception in 1921.

\* \* \*

E. R. GALVIN, since January, 1936, assistant general sales manager of the Caterpillar Tractor Co., Peoria, Ill., has been made general sales manager. Before his association with the company in 1928, he was general sales manager of the Cleveland Tractor Co.

\* \* \*

H. C. JOUBLANC has been appointed chief metallurgist for the Harnischfeger Corp., Milwaukee. He has had extensive experience in the metallurgical and welding research field, having been identified for 10 years with the Republic Steel Corp. and for four years with the welding development and research department of one of the country's leading welding equipment manufacturers.

\* \* \*

HOWARD B. HALL, for the past eight years director of the industrial division of Murray & Flood, consulting engineers, has been appointed regional director in charge of the Cleveland, Cincinnati and Pittsburgh territories for the Foster Wheeler Corp., New York. He will make his headquarters in the Cleveland office of the corporation at 526 Superior Avenue.

FRED J. ESSLINGER, formerly identified with the Champion Rivet Co., Cleveland, and later a welding consultant in Cleveland, has been retained as a welding adviser by the Riverside Steel Co., Wheeling, W. Va.

\* \* \*

JOHN M. SCHREINER, who has been identified with the Detroit office of the Black & Decker Mfg. Co., Towson, Md., for the past 12 years, has been made manager of the Detroit branch, succeeding the late George W. Stoiber. W. J. FEN-



JOHN MAY, whose appointment as general manager of sales of the American Steel & Wire Co. was announced in these columns last week.

WICK, for the past several years co-manager of the Cleveland territory, has been appointed manager of all activities in that branch. G. H. TRESLAR has been appointed supervisor of the Detroit and Cleveland territories and will cooperate with Mr. Schreiner and Mr. Fenwick in sales promotion work.

\* \* \*

JOSEPH N. KILBY has been appointed general manager of the Redbourn Hill iron and steel works of Richard Thomas & Co. at Scunthorpe, England. For the past five years Mr. Kilby has been technical adviser for the South Durham and Cargo Fleet group of iron and steel companies on the Tees-side.

\* \* \*

EDWARD PROVOST, power plant and equipment engineer, has become identified with Iron & Steel Products, Inc., Railway Exchange Building, Chicago. ADOLPH WALESKI has been placed in charge of structural work, succeeding P. K. FREESE, who has resigned. ARTHUR LOOS has also been added to the staff.

\* \* \*

CHARLES H. DISHMAN has been made Western district manager of sales, with office in the R. A. Long Building, Kansas City, for the Granite City Steel Co., Granite City, Ill., with JOSEPH SMITHERS as his assistant. RICHARD W. ORTHWEIN has become district manager of sales for the St. Louis district, with offices at 1805 Boatmen's Bank Building.

\* \* \*

H. A. PLUSCH, formerly vice-president and technical director of the Precision Grinding Wheel Co., Inc., Philadelphia, has resigned. He had been identified with the company since its inception 17 years ago and has held various executive positions. After a brief period of relaxation, Mr. Plusch plans again to enter the field of abrasive engineering.

\* \* \*

CHARLES S. PATERSON, supervising erecting engineer of the Bucyrus-Erie Co., South Milwaukee, Wis., was guest of honor at a banquet given by the Quarter Century Club of company executives and employees at the Bucyrus Club on March 6 in honor of the completion by him of 50 years of service to the company. He was born in Abroath, Scotland, on Jan. 4, 1865, and came to America early in 1887 to begin work as a machinist in the plant of the Bucyrus Foundry & Machine Co. at Bucyrus, Ohio. When the Bucyrus company moved its plant to South Milwaukee in 1893, Mr. Paterson was given charge of all erection activities. In this capacity he supervised the assembly of all of the large units the Bucyrus company built for the construction of the Panama Canal and other large governmental and private projects. He is considered an expert on railroad crane and derrick design and construction.

\* \* \*

NELSON T. HASENFLUE has been elected secretary and general manager Par-Brook Mfg. Co., Cleveland, to fill vacancy caused by the recent death of George F. Collister. Mr. Hasenflue formerly was secretary-treasurer and general manager of the Champion Hardware Co., Geneva, Ohio, where he took an active interest in civic affairs. The Par-Brook Co. is a manufacturer of various sheet metal products, including custom built cabinets and cases, hollow metal doors, steel stairs and other equipment and also specializes in the fabrication of various metals for industrial requirements.

\* \* \*

LEWIS B. LINDEMUTH, consultant for steel work operations, New York, has moved his office to 134 East 47th Street.

## Manly Award to Wright Engineer

RAYMOND W. YOUNG, assistant engineer, Wright Aeronautical Corp., Paterson, N. J., will be awarded the 1936 Manly Memorial Medal at the banquet, March 12, closing the two-day national aeronautical meeting of the Society of Automotive Engineers. He achieved this distinction for his paper on "Air-Cooled Radial Aircraft - En-



R. W. YOUNG

gine Performance Possibilities," presented at the S.A.E. annual meeting, Jan. 17, 1936, at Detroit.

The meeting is being held at Washington, in cooperation with the American Society of Mechanical Engineers, the Aeronautical Chamber of Commerce, the Air Transport Association of America, and the Institute of Aeronautical Sciences. Two inspection trips through the National Bureau of Standards Laboratories will be features. One covers the laboratories devoted to research on aircraft engines under conditions simulating actual flight; also on fuels and lubricants. The other trip includes visits to laboratories and wind tunnels where studies of vibration, fatigue failures and aerodynamics are made. Improved fuels, test results of aircraft vibration, air-cooled engine fin design, lubrication and engine reduction gearing are among the subjects of papers prepared for the meeting.

General Gear Co., specialist in the manufacture of small gears and formerly located at 2930 East Canfield Street, Detroit, has moved to new and larger quarters at 6061 Wabash Street. F. A. Bernstein is general manager.



**...OBITUARY...**

ROBERT THOMPSON HAZELTON, treasurer and works manager of the Cincinnati Shaper Co., died of a heart attack March 3 at his home at Hyde Park, Cincinnati. Mr. Hazelton who was 53 years old, was born in Petoskey, Mich. After receiving his formal education in Rochester, N. Y., he entered the engineering field. Mr. Hazelton went to Cincinnati about 25 years ago. For a period of seven years, he was chief engineer and general superintendent of the Cincinnati Milling Machine Co. Since 1920 he had been associated with the Cincinnati Shaper Co. Mr. Hazelton was one of the outstanding designing engineers of the machine tool industry. He was a member of many engineering societies.



LESLIE BALDOCK, of the Timken-Detroit Axle Co., Detroit, died on

March 3 following an operation at the age of 42. He joined the Tim-



R. T. HAZELTON

ken organization in Canton in 1919 and was transferred to Detroit in 1922.



CHARLES WESLEY, SR., president of the Wesley Steel Treating Co., Milwaukee, died on March 3, aged

71 years. He was born in what is now Czechoslovakia and came to America in 1886. For 18 years he was in charge of the development of the heat treating department of C. J. Smith & Sons, predecessor of the present A. O. Smith Corp. It was in 1902 that Mr. Wesley worked with Henry Ford in devising carbonizing and hardening automobile gears and camshafts for his first car. He established his own heat treating plant in 1915. It is considered one of the largest and most modern shops of its kind in the United States. His son, Charles I. Wesley, is vice-president and general manager of the company.



ARMIN W. KAISER, district sales manager of the Linde Air Products Co. at Milwaukee, died on Feb. 27, aged 50 years. He had been ill six months. Mr. Kaiser was born in Mayville, Wis., and resided in Milwaukee since 1906. He was widely known in the oxyacetylene industry.



HARRY W. GREEN, for many years traffic manager of the Kearney & Trecker Corp., Milwaukee, manu-

**Free Moving  
Low Headroom  
Heavy Duty  
Hand Operated**

**THE AMERICAN MONORAIL CO.**

13100 Athens Ave., Cleveland, O.

New in design—simplified in construction, yet these American Mono-Rail cranes move freely by hand, carrying three to five tons over maximum floor areas. Runways of high carbon steel cannot pinch down—trolleys with precision bearings roll smoothly—rigid construction of long end trucks keep bridge perfectly aligned. For similar, low-cost, heavy-duty cranes let American MonoRail engineers make recommendations.

Write for further details.

facter of milling machines, died after a long illness on March 2, aged 56 years.

\* \* \*

WALTER E. GREEN, vice-president of the Baker Mfg. Co., Evansville, Wis., manufacturer of gasoline engines, pumps and farm specialties, died on March 3, aged 61 years. He was identified with the concern nearly 30 years and was prominent in Evansville civic affairs.

## Aircraft Production Increased 78 Per Cent

**A**N increase of approximately 78 per cent in the total number of airplanes manufactured in the United States in 1936, and of 66 per cent in the number of light airplanes of the private owner type, is shown in aircraft production figures for the year made public today by the Bureau of Air Commerce, Department of Commerce.

The total of all aircraft produced was 3006 in 1936 as against 1691 for 1935. The increase is particularly noticeable in small civilian

airplanes of the types suitable for private owners. The greatest increase in this classification occurred in the number of two-place cabin land monoplanes produced. In 1935 there were 458 manufactured while 938 were constructed in 1936. The number of three-place cabin land monoplanes increased from 83 in 1935 to 96 in 1936.

Of the total 1936 production, 1637 aircraft were for domestic civil use, 858 were for delivery to military establishments, and 511 were exported.

The industry produced 1433 monoplanes and 204 biplanes. The 1433 monoplanes included 110 of the open cockpit type and 1323 cabin craft. Of the biplanes 29 were open cockpit and 175 were cabin planes.

**Harnischfeger Corp.**, Milwaukee, has appointed R. D. Jenkins & Sons, 202 East Second Street, Reno, Nev., as exclusive agents for excavators and welders. Their territory includes the section of Nevada west of the counties of Elko, Eureka, Lincoln and Clark. They will work in conjunction with the P&H San Francisco offices.

## British Iron and Steel Federation

**T**HE British Iron and Steel Federation has moved to Steel House, its new London headquarters in Tothill Street, Westminster. The new offices were opened March 1.

## How British Scrap Plan Will Operate

**T**HE agreement just reached between the British Iron and Steel Federation and the National Federation of Scrap Iron and Steel Merchants does not involve the creation of a central buying bureau. It simply means the establishment of a central allocation office whose activities will be concerned with the distribution of available supplies.

Under this system of allocation steps will be taken to insure that certain steel firms do not obtain

# New 6" x 6" PEERLESS Improved HIGH DUTY METAL SAWING MACHINE

Automatically feeds the bar of stock forward to the gauge, automatically closes the vise, and automatically continues to repeat the complete cycle of cutting until the entire bar is cut to the length the gauge is set for, all without the attention of an operator.

The three speed sliding gear transmission — crankshaft — balance lever and trunnion blocks are fully ball bearing equipped.

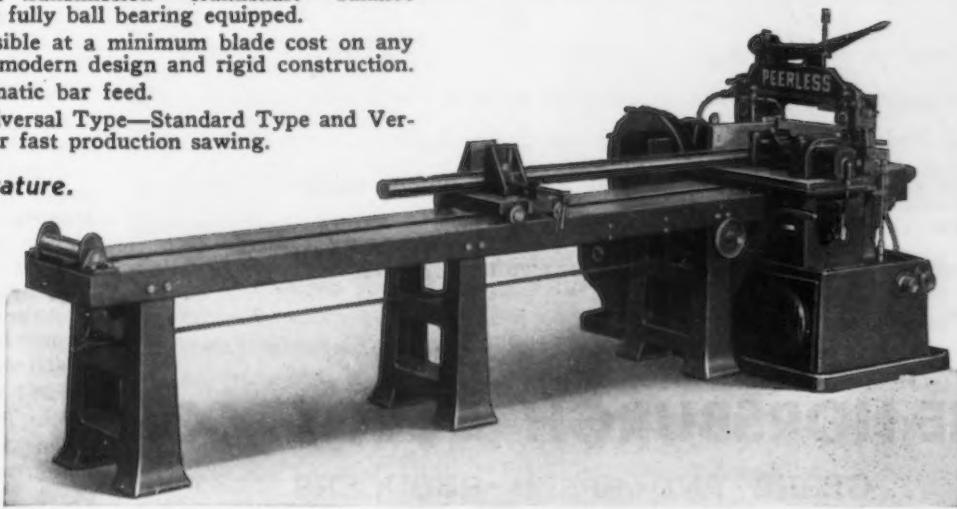
The fastest cutting time possible at a minimum blade cost on any kind of metal because of its modern design and rigid construction. Also furnished without automatic bar feed.

Also—Peerless Improved Universal Type—Standard Type and Vertical Type in various sizes for fast production sawing.

Write for complete literature.

**PEERLESS  
MACHINE  
COMPANY**  
RACINE, WISCONSIN

with Hydraulically Operated Automatic Bar Feed



excessive tonnage of scrap to the detriment of other concerns.

The practice with regard to the employment of scrap varies greatly and the percentage employed in steel furnaces may be anything between 20 and 90. Merchants who wish to deliver scrap will, it is stated, get in touch with controllers who will authorize delivery where this is justified or divert material to works whose need is more urgent.

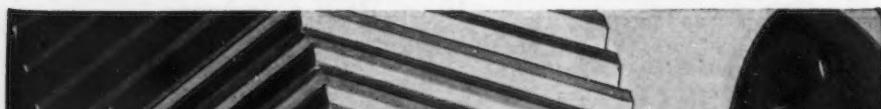
The allocation office is to be ad-

ministered by a central joint committee composed of representatives of the British Iron and Steel Federation and the National Federation of Scrap Iron and Steel Merchants. There are seven regional associations attached to the latter body.

The firms representing the scrap interests will be Thomas Ward and Co., Cox and Danks, Arnott Young and Co., and Cohen, Sons and Co.

While the plan for the central allocation office has been drafted in

main outlines, much detail work yet remains to be done. One of the difficulties now receiving attention is that different firms use different qualities of scrap in varying tonnages, and efforts have to be made to meet these special requirements. Merchants will be required to agree not to sell above an agreed price. This will check uneconomic competition between steelmakers for supplies, and every scrap merchant from whom steelworks buy will be required to be a member of one of the seven regional associations of the National Federation of Scrap Iron and Steel Merchants.



## SMOOTH POWER



Where speeds are high . . . where smooth operation is required . . . where quietness is a factor, Horsburgh & Scott Herringbone Gears and Speed Reducers are ideal. Gears are Sykes type . . . accurate . . . and with a continuous, double helical tooth . . . giving increased bearing surface . . . greater resistance to wear. They provide the most economical . . . the smoothest known means of transmitting power between parallel shafts.

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GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE, CLEVELAND, OHIO, U. S. A.

### Manufacturing Income In Various States

In ten states income from manufacturing accounted for more than 30 per cent of the total production income received in 1935, according to the National Industrial Conference Board.

These states, all of which were in the northeastern section of the country, and the proportion of their total income receipts derived from manufacturing were: Rhode Island, 40.3 per cent; Connecticut, 39 per cent; Michigan, 36.7 per cent; New Hampshire, 36.3 per cent; Indiana, 34.7 per cent; Ohio, 34.3 per cent; Wisconsin, 32.6 per cent; Pennsylvania, 31.0 per cent; Delaware, 30.2 per cent, and Massachusetts, 30.1 per cent.

The income received in these states from manufacturing amounted to 44 per cent of the total income from manufacturing for the country as a whole.

Income from manufacturing accounted for between 20 per cent and 30 per cent of total production income in eight states in 1935. These states were all east of the Mississippi and included New Jersey, Illinois, North Carolina, Maine, New York, South Carolina, West Virginia, and Georgia.

In all the states west of the Mississippi income from manufacturing was relatively small as compared with total income received. Manufacturing contributed the highest percentage of total income, 18.2 per cent in Washington, and in Missouri contributed 17.8 per cent. In Arizona, manufacturing income accounted for only 3.9 per cent of total income, in North Dakota for 3.3 per cent, and in New Mexico for 1.7 per cent.

For the country as a whole income from manufacturing accounted in 1935 for approximately 24 per cent of total production income.

## Republic Raises Wages; Declares for "Open Shop"

REPUBLIC STEEL CORP. held meetings in the main office, Cleveland, Monday and Tuesday with employee representatives to work out details of the wage rate adjustments in connection with the wage advance and to discuss vacation plans. When the company announced that its common labor rate would be increased from 52½c. to 62½c. per hr., it stated that all other rates would be equitably adjusted. The adjustment of these rates was the chief subject of discussion at the meetings of the employee representatives of the company. Employee representatives in the various plants selected the representatives to attend the meetings. About 25 were chosen to attend the Monday meeting and 20 the Tuesday meeting.

The company has issued the following statement, defining the company's position with respect to collective bargaining:

"The policy of this company has been, and is now, that it will meet with any person or persons, or organization, and will bargain with them for whomsoever they represent.

"If any union or organization claiming to represent any of our employees asks for a conference with our company, we will meet and bargain with them for whomsoever they represent. This is in conformity with our general policy as stated above.

"Likewise, we will continue to meet and bargain with the employee representatives for the employees whom they represent.

"We repeat the statement which we made to you last July. Republic stands for the open shop principle. No employee has to join any organization to get or hold a job."

### Steel Casting Company Changes Hands

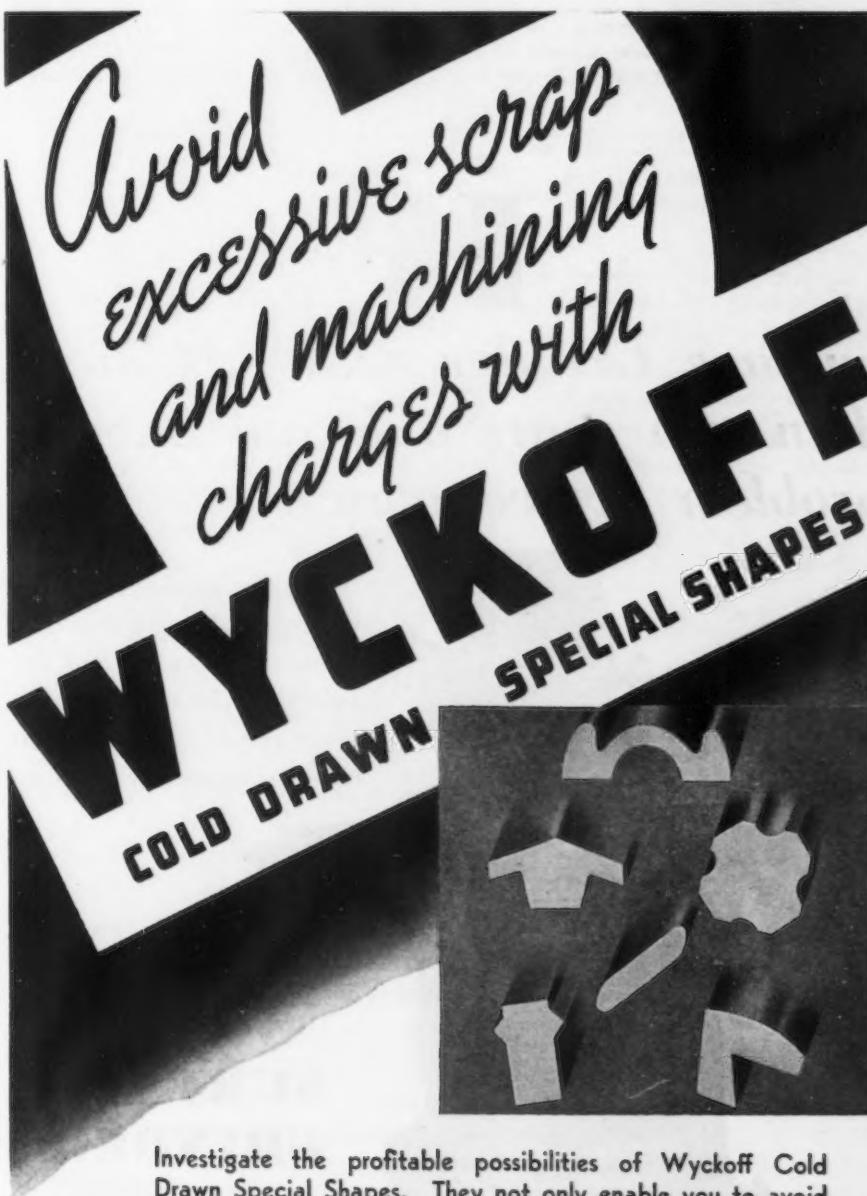
THE George H. Smith Steel Casting Co., Milwaukee, established in 1896 and one of the oldest steel foundries west of Pittsburgh, has been purchased by Edward A. Bacon, a director of the Cutler-Hammer, Inc. The name of the company has been changed to the Smith Steel Foundry Co. Mr. Bacon is president and treasurer and W. J. Donnelly, who entered the Smith company in 1898 and has

been manager since 1932, will be secretary. Harold Wallis remains as foundry superintendent. The production force of about 150 men will be kept intact.

Additional melting and heat treating equipment are being pur-

chased, but no additions to the plant, which occupies a city block, are planned for the present.

The Smith foundry was established by the late John M. Stowell and sold in 1898 to the late George H. Smith, who was president until his death in 1912. At the outset it employed small crucible furnaces, but in 1901 changed to the converter process. Later, modified open hearths were installed, to be replaced afterward by large electric furnaces.



Investigate the profitable possibilities of Wyckoff Cold Drawn Special Shapes. They not only enable you to avoid excessive scrap and machining costs but also effect a considerable saving in weight. A blueprint, sketch or sample of your particular requirement is all we need to solve your problem most economically.

### WYCKOFF DRAWN STEEL COMPANY

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Manufacturers of Carbon and Alloy Steels

Turned and Polished Shafting

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Wide Flats up to 12" x 2"

## Steel Employment Totals 548,000 Rising 94,000 Workers in a Year

An increase of 11,000 employees during January brought the total number of persons on the payrolls of the steel industry to 548,000, a new high record, the American Iron and Steel Institute has announced. The figures are based on reports of companies employing approximately 95 per cent of the industry's workers.

Employment in January showed a gain of 76,000 workers, or 18 per cent over 1929, and a gain of 94,000 workers, or nearly 21 per cent

over January, 1936. Of the 548,000 employees in January, 496,000 were wage earners paid on an hourly, piecework or tonnage basis, and the rest were salaried workers.

Owing to the Ohio River flood, which temporarily closed some mills, and strikes in some consuming industries, which shifted production to heavier steels with lower labor costs, total payrolls of the industry in January were slightly lower than in December, 1936. The total for all workers in January

was \$76,400,000, against \$76,800,000 in December, 1936. The January payrolls showed a gain of 42 per cent over the January, 1936, total of \$53,800,000.

Average hourly earnings of wage earners during January amounted to 72.5 cents, 10 per cent above the 1929 average of 65.4 cents. In January, 1936, steel wage earners received an average of 65.2 cents per hour.

During January wage earners worked an average of 40.5 hours a week, compared with 41.5 in December, 37.0 in January, 1936, and an average of 39.8 for all of last year. In 1929 steel wage earners worked 55 hours per week.

The figures on earnings for January, 1937, do not reflect the latest increase in wages of steel workers, which will become effective on March 16.

**IF you have a  
Surface Grinder which is more  
than two years old, you have a  
problem in economics.**



Capacity—24" x 8" x 12"

We have solved many of these problems for our good customers, and the solution has generally been confirmed with dollars to spare by the re-

liable and efficient performance of this new . . .

### No. 3 B SURFACE GRINDER

•  
WRITE FOR PARTICULARS  
•

**ABRASIVE MACHINE TOOL COMPANY  
EAST PROVIDENCE, R. I.**

### New England Foundry Conference

THE first New England regional foundry conference will be held at the Massachusetts Institute of Technology, Friday and Saturday, April 9 and 10. The conference will be under the auspices of the New England Foundrymen's Association, the American Foundrymen's Association and the Massachusetts Institute of Technology with the American Society of Mechanical Engineers, American Society of Metals, American Welding Society, American Institute of Mining and Metallurgical Engineers cooperating.

The purpose of this conference is to bring together engineers, metallurgists and foundrymen for a free discussion of the problems encountered in the design and manufacture of different kinds of castings.

### Lake Ore Prices Increased 45c. a Ton

CLEVELAND, March 9.—A 45c. advance in prices on Lake Superior ore for the season was established late Monday by sales of substantial lots. This is the first price change in ore since 1929. The advance in price is said to cover only the additional costs resulting from the two wage advances since last year's prices were named and an increase of 10c. a ton in the vessel rate on ore which has just been announced. The ore boost will add approximately 90c. a ton to the cost of making pig iron.

## SWOC and Employee Representatives Gird for Battle in Carnegie-Illinois Plant

PITTSBURGH, March 9.—The signing of a union contract by Carnegie-Illinois Steel Corp. last week brought to the forefront the question of the future status of the employee plan of representation. The answer was quickly forthcoming, however, when the company announced that the employee union status remained unchanged and that it would be recognized as a bargaining unit to the extent of its membership. Late last week a grievance committee composed of four Carnegie-Illinois employee representatives and commonly known as "the little supreme court," met with Benjamin F. Fairless, president of Carnegie-Illinois, and negotiated a flat 10c.-an-hr. increase for all hourly workers. They also obtained the company's assurance that for the time being no attempt to get around the time-and-a-half payments for work over 40 hours by employing additional men would be made. With SWOC officials to meet Carnegie management this week on the question of wage payments for those making above the common labor rate, recent circumstances give every indication that the so-called company union stole the show from the SWOC.

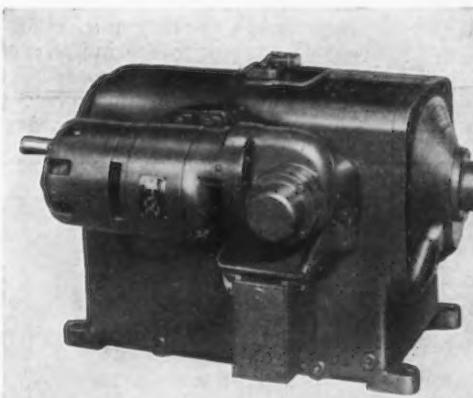
During the conference with Mr. Fairless, company union spokesmen were told to strengthen their plan, and taking this friendly advice, the grievance committee assumed complete bargaining power for all members of the employee representation plan. Furthermore, the company has signified its willingness to recognize this small group as the official spokesman of the employees who are in favor of the company union. It has also been indicated that plans are on foot to completely revise the employee representation plan so that it will be entirely divorced from the company in every way and be financed by its membership. With these momentous changes being worked on, and with anti-union feeling running high among those in favor of the plan of employee representation, it is expected that the entire setup will be put to employee vote at annual elections to be held this June. Meanwhile, rebuffed by Mr. Green, when they asked for advice on the formation of an independent plant union, company union leaders have sought the help of John P. Frey, vice-president of the American Federation of Labor, and bitter opponent of John L. Lewis. Mr. Frey is to meet with the employee representatives this week in Pittsburgh, the result of

which might be drastic changes in the employee representation plan setup. With most company union men being strongly opposed to John L. Lewis, it is obvious that the choosing of his most bitter enemy, Mr. Frey, for consultation, might result in some definite align-

ment either directly or indirectly of the company union with the A. F. of L.

Employee representatives, through their grievance committee at the Carnegie-Illinois plants, have also obtained the right to bargain for the "white-collared" workers who have been overlooked as far as wage advances during the history-making labor events of the past week are concerned.

An interesting sidelight to recent developments was the fact



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★ Accurate Stepless Speed Control... Minimum to Maximum in either direction

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FROM industry after industry comes glowing praise of the New Oilgear *Fluid Power* Variable Speed Transmission. New simplicity, new adaptability, new compact design, new low prices, all combine to make Oilgear the most widely discussed development in the transmission field. Be sure you have full information. Write for Oilgear Bulletin 60000 today. THE OILGEAR COMPANY, 1311 W. Bruce St., Milwaukee, Wis.



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VARIABLE SPEED TRANSMISSIONS

that Jones & Laughlin steel management and its employee representatives were still negotiating on the 40-hr.-week problem after other companies had announced the establishment of this work-week. During the negotiations with employee representatives, the latter bluntly refused to agree to the 40-hr. week because it would mean, in the end, a cut in pay for those workers who had been working 48 hr. a week. However, in an official letter to employee representatives, the company intimated that the question was out of both the hands of management and employee representatives since other major steel companies had adopted the practice and there was evidence that the Government would soon be working toward legislation setting up a 40-hr. week.

Events within the past week, however, wherein the Carnegie-Illinois management agreed to retain present working hours in lieu of hiring new employees, relieves this particular situation for the time being.

Companies have yet been unable to accurately estimate the cost of the recent wage program, but some say the increase will run close to 25 to 29 per cent of the present payroll. With the outside common labor rate at 62½c. an hr., and the probability of a 10c.-an-hr. increase for all other wage earners, hourly rates of pay in the steel industry will be the highest in its history. Even though the companies made a serious attempt to operate on a 40-hr. week, it would be impossible to do for quite some time owing to the shortage of skilled labor. Many

steel jobs are highly skilled in nature and it takes anywhere from one to four years to make a first-class workman. Thus the industry is faced with the necessity of paying time-and-a-half for all work over 40 hr. as long as steel operations remain at current levels. A large segment of steel workers are putting in a full 48-hr. week, with the average for the industry being close to 44 hr.

Meanwhile, according to SWOC officials, their headquarters are being deluged with applications from steel workers seeking to align themselves with the union. As mentioned in these columns before, it is becoming increasingly clear that a fight to the finish between pro-Lewis and anti-Lewis adherents is a definite certainty. The concerted action of the Carnegie-Illinois company union to "break loose" and become an independent plant union is adequate proof that the SWOC, for the time being at least, is wrong in its assumption that the company union is "dead as a dodo."

## CONVENTIONS

MARCH 15 TO 17—National Association of Waste Material Dealers. Annual convention, Chicago. Charles M. Haskins, 1109 Times Building, New York, secretary.

MARCH 15 TO 19—Oil Burner Institute, Convention Hall of Commercial Museum, Philadelphia. Oil burner and air conditioning convention and exposition. G. Harvey Porter, 30 Rockefeller Plaza, New York, managing director.

MARCH 16 TO 18—American Railway Engineering Association, Palmer House, Chicago. Annual convention. E. H. Fritch, 59 East Van Buren Street, Chicago.

MARCH 21 TO 27—American Ceramic Society, Waldorf-Astoria Hotel, New York. Annual convention. Ross C. Purdy, 2525 North High Street, Columbus, Ohio, secretary.

MARCH 23 TO 26—American Management Association, Pennsylvania Hotel, New York. Packaging, packing and shipping conference. Alvin E. Dodd, 330 West 42nd Street, New York, president.

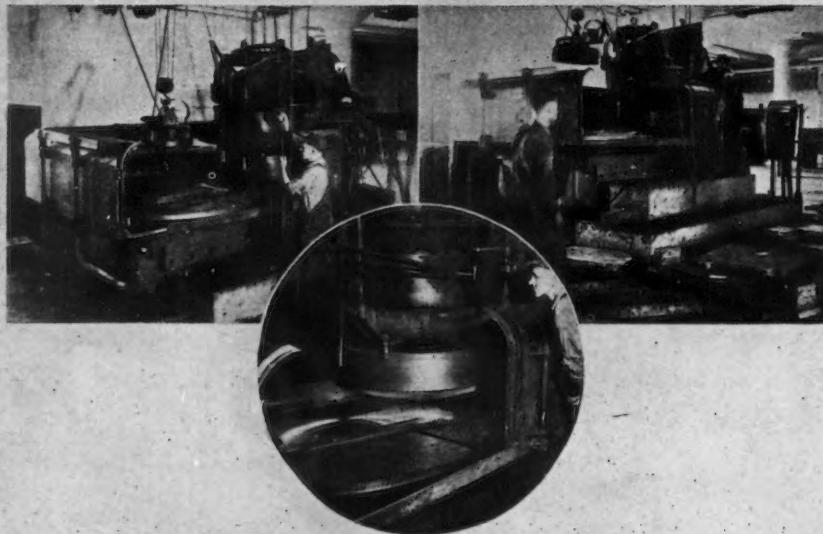
APRIL 12 TO 15—American Chemical Society, University of North Carolina, Chapel Hill, N. C. Annual meeting. Dr. Charles L. Parsons, 728 Mills Building, Washington, secretary.

APRIL 15—National Council of American Shipbuilders, Whitehall Club, New York. Annual convention. C. C. Knerr, 11 Broadway, New York, secretary.

APRIL 19 TO 24—International Association for Testing Materials, London. Second international congress. K. Headlam-Morley, 28 Victoria Street, London, S.W.1, secretary.

APRIL 26 TO 28—Chamber of Commerce of the United States, Washington. Annual meeting. D. A. Skinner, 1615 H Street, N.W., Washington, secretary.

## Meeting-and Beating COMPETITION



THESE three illustrations show the 27 Blanchard Surface Grinder machining die shoes. These steel and semi-steel shoes are ground from the rough to finish size. This type of work is highly competitive. There is no other method of getting the production and finish given by the Blanchard.

The 27 Blanchard is the largest Blanchard Grinder made. Wheels range in size from 27 inches to 42 inches. Swing for work is from 60 inches to 96 inches diameter.

If you have large surfaces to be machined let us show you what the Blanchard can do on this type of work.

**BLANCHARD**  
**MACHINE COMPANY**  
64 STATE STREET, CAMBRIDGE, MASSACHUSETTS

# Nye Shipbuilding Plan Called Fantastic And Ineffectual

**W**ASHINGTON, March 9.—Vigorous challenge to the legislative plan of the Nye Munitions Committee to nationalize the naval shipbuilding program has been filed with members of Congress and the Secretary of Navy by the National Council of American Shipbuilders, which declared that the scheme is altogether capricious and ineffectual as the peace measure for which the committee recommendations are advanced. The council represents the larger part of the shipbuilding and ship repair industry of the United States. The Nye committee proposal is declared to be an actual war hazard and to be "highly inimical to the national defense and general efficiency of the Navy."

The Nye program contemplates a Government monopoly on construction of naval vessels, gun forgings, projectiles and armor plate for the Navy and production of powder, rifles, pistols and machine guns for the Army. The program, however, is generally looked upon as being a political gesture rather than a serious undertaking and is not expected to get Senate sanction. The House last week passed the \$526,000,000 naval appropriations bill, the report of which made suggestions to Congress for disposal of the idle Government armor plate plant at South Charlestown, W. Va., and thus reflecting an attitude entirely contrary to that which the Nye group is seeking by nationalizing ship and munitions production. Senator Nye of North Dakota, chairman of the Senate Munitions Committee, heads the group and has been joined by Senators Pope of Idaho and Bone of Washington.

The Nye group at the same time is opposing the proposed increase in the naval defense program, such as is contemplated in the House bill.

The National Council of American Shipbuilders, in attacking the Nye Munitions Committee plans to nationalize Government shipbuilding and production of its own munitions, refers to the procedure of the majority of the munitions committee as making the shipbuilding industry a political football and converting the committee hearings into a rostrum for the advocacy of Government ownership, rather than devoting them to fact finding about shipbuilding costs and practices. It points out that the case against American shipbuilding obviously was prejudged and shows that during the process of the inquiry the

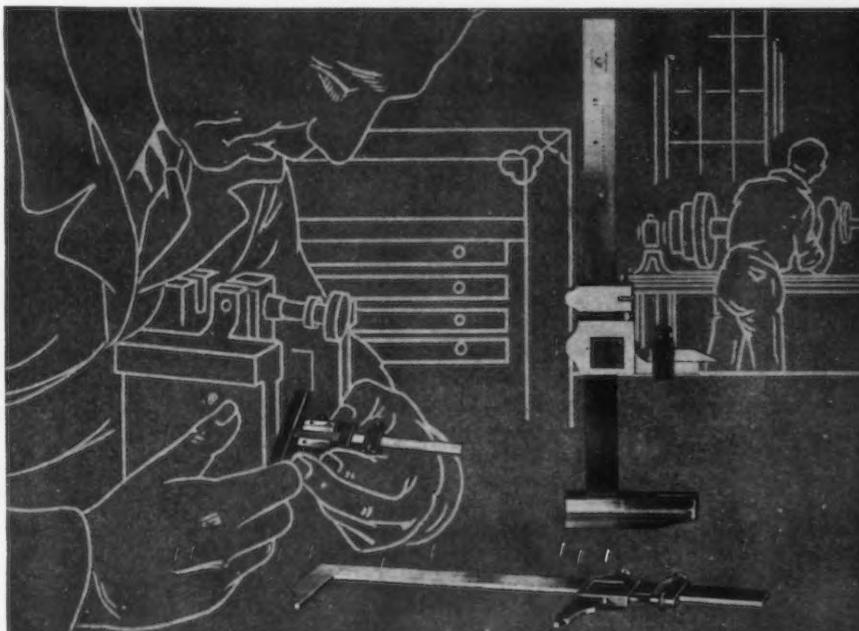
industry, as represented by the council, was denied repeated requests for opportunity to testify in order to clear numerous matters "which without such testimony became garbled and confused."

## Duraloy Co. Secures Plant at Scottdale

**T**HE Duraloy Co., which recently lost its plant at New Cumberland, W. Va., by fire, announces the purchase of a large part of

the well-equipped foundry owned by the United States Pipe & Foundry Co. at Scottdale, Pa., on the Pennsylvania and the Baltimore & Ohio Railroads. This plant is modern in every respect and includes besides up-to-date molding and casting facilities, well-equipped machine and pattern shops, store-room, testing laboratory, change room and offices.

The fire at the old plant did not materially damage the electric furnaces, centrifugal casting machines and some of the other equipment. All of this was quickly moved to Scottdale, and as the power requirements could be fully met, there has been little delay in getting into production again. By March 15 the company will be able to operate on a full schedule.



## PRODUCTION BEGINS in the TOOLROOM

**Y**OUR best assurance of fast accurate work on jigs, fixtures or special gages is a plentiful supply of Starrett Precision Shop Equipment Tools. The revised edition of Starrett Catalog No. 25 AA illustrates and describes over 3000 fine precision tools and dial indicators, each one designed to bring new speed and accuracy to measuring or inspecting operations. Write for your free copy.

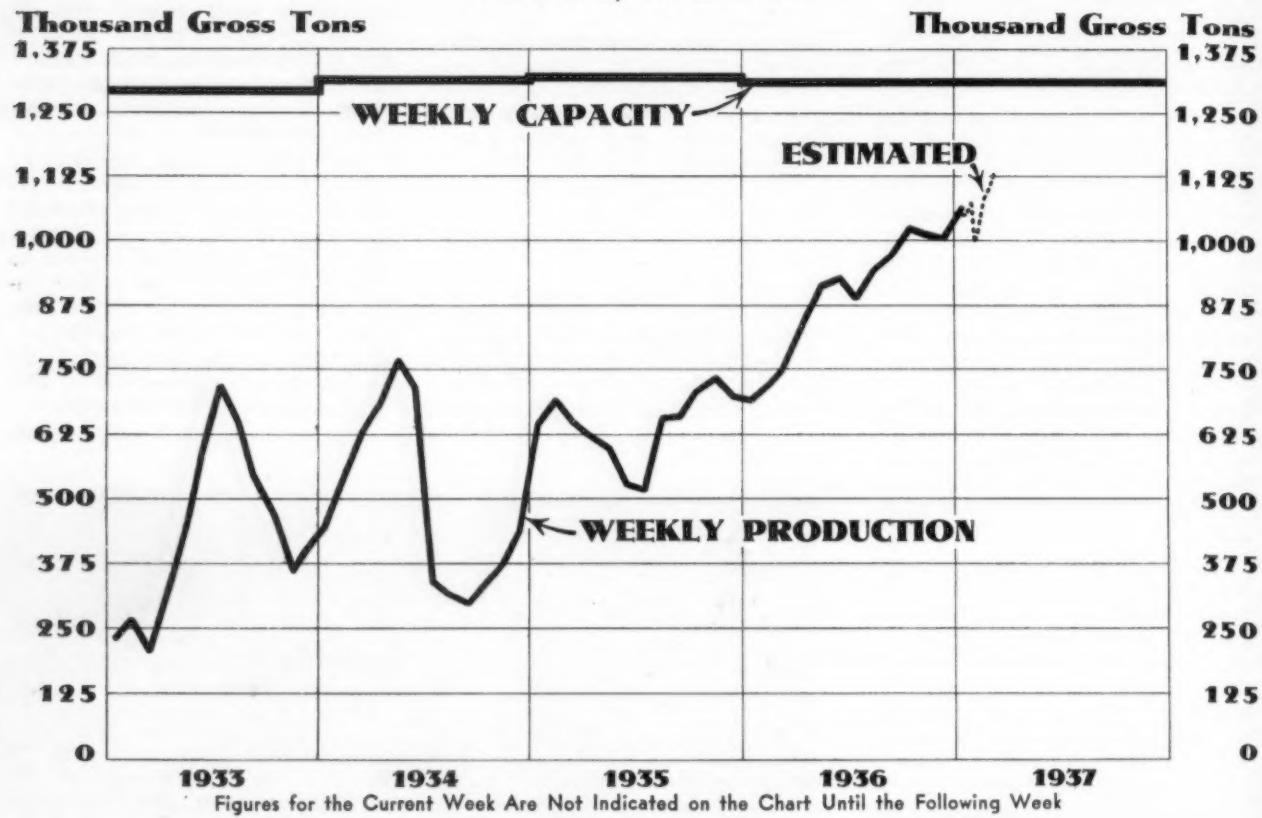
**THE L. S. STARRETT CO., ATHOL, MASS., U.S.A.**

*World's Greatest Toolmakers—Manufacturers of Hacksaws Unexcelled—Steel Tapes, Standard for Accuracy*

*Standardize on*  
**STARRETT TOOLS**  
BUY THROUGH YOUR DISTRIBUTOR

# PRODUCTION

Average Weekly Production of Open-Hearth and Bessemer Steel Ingots by Months, 1933-1937, and Estimated Production by Weeks in 1937



Figures for the Current Week Are Not Indicated on the Chart Until the Following Week

## STEEL INGOT PRODUCTION BY DISTRICTS: Per Cent of Capacity

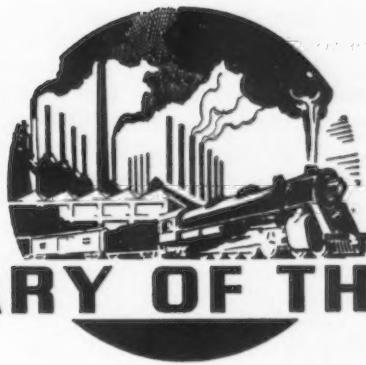
District	Current Week	Last Week
Pittsburgh .....	89.0	87.0
Chicago .....	82.0	81.0
Valleys .....	86.0	85.0
Philadelphia .....	60.0	60.0
Cleveland .....	77.0	82.0
Buffalo .....	91.0	91.0
Wheeling .....	99.0	99.0
Southern .....	74.5	74.5
Ohio River .....	75.0	48.0
Western .....	91.5	91.5
St. Louis .....	85.0	80.0
Detroit .....	100.0	100.0
Eastern .....	98.0	98.0
Aggregate .....	87.0	85.0
Average Year to Date	81.2	80.6

A CHANGE has been made in THE IRON AGE's weekly chart of steel ingot production, shown on this page, in that calculation of production on a daily basis has been discontinued and weekly production has been substituted. The new chart is based on average weekly production figures by months as officially reported by the American Iron and Steel Institute, and, in addition, to preserve its timeliness, the chart shows each week's individual production in 1937 as is regularly estimated by THE IRON AGE. This change has been made to conform with the new practice begun by the American Iron and Steel Institute of calculating production on a weekly rather than a daily basis (THE IRON AGE, Feb. 11, p. 94; and Feb. 18, pp. 56-7). Since the estimate of production will be made for 52 weeks of the year, the chart will naturally reveal a greater fluctuation in this respect than will affect the curve showing average weekly production by months.

## Weekly Booking of Construction Steel

FROM THE IRON AGE

	Week Ended				Year to Date	
	Mar. 9, 1937	Mar. 2, 1937	Feb. 9, 1937	Mar. 10, 1936	1937	1936
Fabricated structural steel awards.....	23,100	10,700	25,630	33,000	251,245	223,715
Fabricated plate awards.....	2,130	1,845	7,575	8,720	30,395	74,390
Steel sheet piling awards.....	0	2,100	1,580	0	14,655	14,045
Reinforcing bar awards.....	710	2,380	4,385	14,615	33,905	104,995
Total Lettings of Construction Steel...	25,940	17,025	39,170	56,335	330,200	417,145



## . . . SUMMARY OF THE WEEK. . .

**... Steel industry ups wages \$200,000,000 per year — advances prices \$208,000,000.**

• • •

**... Frey's acceptance of Carnegie-Illinois workers' invitation may pave way for battle between unions.**

FACED with the problem of underwriting \$200,000,000 a year in increased labor cost, the steel industry has announced immediate price rises on substantially all commodities with the exception of tin plate. These increases range from \$2 to \$12 a ton, and bring THE IRON AGE composite price for finished steel to 2.605c. per lb., an immediate increase of 0.275c., and thus to \$5.76 per ton above the high of 1929.

In the semi-finished category, rerolling billets, sheet bars and forging billets were advanced \$3 per ton, and skelp, which has remained unchanged for some time, was marked up \$6. Wire rods are up \$4, with an additional \$1 added to the size extra over 9/32 in.

Hot-rolled carbon and alloy bars, are \$5 a ton higher, cold-finished bars are up \$7, plates and shapes \$4, sheet steel piling \$4, reinforcing bars \$6, standard rails \$3.50 and light rails \$5.

Flat-rolled products, of the type used by the automotive industry, took the brunt of the price action. Hot-rolled annealed sheets were advanced \$7, base, and, due to sharp increases in gage extras, certain grades are \$10 per ton higher. And light cold-rolled sheets, because of base increases and advances in extras, are as much as \$11 per ton higher. Tin plate seems to be the only commodity unaffected, although tin mill black plate has gone up \$7 per ton.

Increased for the first time since 1934, tubular products reflect a boost of \$10 per ton on standard black pipe and \$12 per ton on galvanized. Oil country goods has been marked up approximately \$5 per ton. Boiler tubes have advanced about 7½ per cent on hot-rolled and 10 per cent on cold-drawn. Hot-rolled mechanical tubing is up about 7½ per cent and cold-rolled 15 per cent. Following previous price rises of less than a week ago, wire products also have been increased again; wire nails are up \$5; barbed wire, \$7; bale ties, \$5;

woven wire fence, \$7; spring wire, annealed fence wire and galvanized fence wire are all up \$6. Bolt and nut prices show a gain of about 15 per cent, and large rivets of \$7 per ton.

Pig iron and iron ore both participated in the upward movement, that of pig iron being \$2 per ton, effective immediately for all second-quarter deliveries. Lake Superior ore received its first price boost since 1929. This amounts to 45c. per ton and will add approximately 90c. per ton to the material cost of pig iron. The new IRON AGE composite pig iron price is \$23.25 a ton, the highest level since 1923.

Bullishness in scrap is still pronounced and prices continue to climb. New buying in principal steel-making centers has lifted scrap quotations an average of 83c. a ton, which brings THE IRON AGE steel scrap composite up to \$21.08.

Makers of tool steels and heat and corrosion-resistant alloys have not yet published new price lists, but a substantial advance is expected before the end of this week.

The estimated annual cost to consumers of steel due to these and other price increases is approximately \$208,000,000. It is necessary to go back to World War days to find price changes of similar magnitude on practically every grade of steel, heavy and light.

Since mills are well booked, consumer resistance to higher prices is not expected to depress the steel operating rate, which is estimated at 87 per cent of capacity for this week. Without doubt, many consumers of steel will be compelled to advance the prices of their own products, not alone to compensate for higher material costs, but to take care of impending wage rate increases in secondary industries. Thus a fundamental, though unavoidable, impetus has been given to general price inflation through the necessity of making a peace offering to labor.

Acceptance of the 40-hr. work week by leading producers is not likely to result in immediately greater employment. The increase in hourly rates for labor, although unprecedented in amount, will not produce a larger weekly wage for those who have been working 48 hr. a week. Carnegie-Illinois employees, on this account, have secured an agreement with the management that present employees shall be permitted to work overtime, rather than to have the company add additional men.

Latest developments in the swiftly moving labor picture show the plan of employee representation strengthened, rather than weakened, by the corpo-

ration's recognition of SWOC. Not only has the Carnegie-Illinois management agreed to bargain immediately with any and all organizations to the extent of their membership, but the independent workers, believed to constitute a considerable majority, are turning toward the A. F. of L. as perhaps the lesser of two evils. Employee repre-

sentatives of the company have extended an invitation to John P. Frey to afford them advice and counsel as to means of avoiding domination by the Lewis organization. The invitation has been accepted and the outcome may prove significant in the impending battle between Green and Lewis.



... Heavy price advances now in force.

... Pittsburgh operations up to 89 per cent.

... Consumer demands still very urgent.

PITTSBURGH, March 9.—Holders in steel history this week were equally divided between a tremendous increase in steel making costs and spot price advances running from \$3 to \$12 a ton. Not only have raw material costs risen, but equally important is the increase in the industry's wage bill as a result of a \$5 a day minimum, a distinct possibility of an industry wide 10c. per hr. wage increase for all workers, and time-and-a-half for work over 40 hr.

With one large producer indicating to its employee representatives that the present work week, which in some cases runs to 48 hr., will remain unchanged for the time being and thus necessitate time-and-a-half payment for work over 40 hr., it is estimated in some quarters that the total increase in wage costs will approximate 29 per cent of the present payroll.

A summary of price advances which went into effect last week for shipment up to and including June 30 follows: Rerolling billets, sheet bars and forging blooms, up \$3 a ton; skelp, up \$6; wire rods up \$4 (a differential of \$5 a ton for sizes over 9/32 to and including 47/64); hot-rolled bars up \$5; plates, shapes, and piling up \$4; cold-finished bars up \$7; reinforcing bars up \$6; standard rails up \$3.50; light rails up \$5; spikes up \$5; track bolts up \$7; tie plates up \$4; forged steel axles up \$4; hot-rolled strip up \$5; cold-rolled strip up \$7; hot-rolled sheets up \$5; annealed sheets up \$7; cold-rolled and enameling sheets up \$6; galvanized and long terne up \$8; tin mill black plate up \$7. Wire prices, in addition to those an-

nounced over a week ago, show further increases as follows: nails up \$5; barbed wire up \$7; bale ties up \$5; heavy fence wire up \$7; bright wire, spring wire, annealed fence wire, and galvanized fence wire up \$6. Pipe discounts have been revised with standard black pipe up five points or \$10 a ton; galvanized up six points or \$12 a ton; oil country goods up approximately \$5; and hot-rolled boiler tubes advanced 7½ per cent with cold-drawn tubes up approximately 10 per cent. Hot-rolled mechanical tubing is up about 7½ per cent with cold-drawn up approximately 15 per cent.

Pig iron has also been advanced \$2 a ton in addition to the \$1 advance announced over a week ago.

Steel operations in the Pittsburgh district have moved up two points to 89 per cent, the highest rate since September, 1929. The Wheeling district remains unchanged at 99 per cent. Heavy melting scrap has advanced \$1.50 a ton in the past week.

#### Pig Iron

With pig iron advanced \$2 a ton last week, effective upon announcement, iron prices have been increased \$3 a ton inside of a week. Supplies remain scarce and producers showed no disposition to fill up their order books before higher quotations went into effect. The Struthers furnace is reported to have closed a contract for a substantial tonnage of iron with Japan. Meanwhile, some producers are making plans to bring in additional furnaces, but extensive repairs and renovations are necessary before this can be done.

#### Semi-Finished Steel

On March 5 Carnegie-Illinois Steel Corp. announced higher prices, effective upon announcement. Rerolling billets, sheet bars and forging blooms are up \$3 a ton while skelp, which had remained unchanged for some time, was advanced \$6 a ton. Wire rods are \$4 a ton higher and a differential of \$5 a ton has been established for sizes over 9/32 to and including 47/64 in. Total specifications booked in February on a daily basis were equally as good as those received in January. Commitments made before the price advance were exceptionally heavy, but there is evidence that the demand continues to be greater than supplies. All producers have been out of the market since last week at first quarter prices.

#### Bolts, Nuts and Rivets

Higher prices, effective immediately and reflecting an average advance of about 15 per cent, have been announced. Price schedules have been rearranged with three base prices; the first showing less than carload lots for items in less than full container quantity; the second is less than carload lots for items in full container quantity, and the third is carload lots in full container quantity. Generally speaking, the second classification allows an additional 10 per cent discount, while the third classification calls for an additional 5 per cent discount. Numerous changes in size classifications have also been made. Bookings in anticipation of the higher prices were heavy within the past week and producers operating schedules are at virtual capacity. Large rivets have been advanced \$7 a ton.

#### Bars

Effective upon announcement made last week, hot-rolled carbon bars and hot-rolled alloy bars were advanced \$5 a ton. In view of the heavy raw material costs and the tremendous increase in the industry's wage bill, it became imperative that producers realize the new prices as soon as possible and as a result practically all mills were out of the market at first quarter quotations before price advances were made. All specifications against first quarter contracts are

# A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous;  
Advances Over Past Week in Heavy Type, Declines in Italics

## Rails and Semi-finished Steel

	Mar. 9, 1937	Mar. 2, 1937	Feb. 9, 1937	Mar. 10, 1936
<i>Per Gross Ton:</i>				
Rails, heavy, at mill.....	<b>\$42.50</b>	\$39.00	\$39.00	\$36.37½
Light rails, Pittsburgh.....	<b>43.00</b>	38.00	38.00	35.00
Rerolling billets, Pittsburgh.....	<b>37.00</b>	34.00	34.00	28.00
Sheet bars, Pittsburgh.....	<b>37.00</b>	34.00	34.00	28.00
Slabs, Pittsburgh.....	<b>37.00</b>	34.00	34.00	28.00
Forging billets, Pittsburgh.....	<b>43.00</b>	40.00	40.00	35.00
Wire rods, No. 5 to 9/32 in., Pittsburgh.....	<b>47.00</b>	43.00	43.00	38.00
Cents	Cents	Cents	Cents	
Skelp, grvd. steel, P'gh, lb..	<b>2.10</b>	1.80	1.80	1.80

## Finished Steel

	Per Lb.:	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	<b>2.45</b>	2.20	2.20	1.85	
Bars, Chicago.....	<b>2.50</b>	2.25	2.25	1.90	
Bars, Cleveland.....	<b>2.50</b>	2.25	2.25	1.90	
Bars, New York.....	<b>2.78</b>	2.55	2.55	2.20	
Plates, Pittsburgh.....	<b>2.25</b>	2.05	2.05	1.80	
Plates, Chicago.....	<b>2.30</b>	2.10	2.10	1.85	
Plates, New York.....	<b>2.53</b>	2.33	2.33	2.09	
Structural shapes, Pittsburgh.....	<b>2.25</b>	2.05	2.05	1.80	
Structural shapes, Chicago.....	<b>2.30</b>	2.10	2.10	1.85	
Structural shapes, New York.....	<b>2.505</b>	2.3025	2.3025	2.06 ½	
Cold-finished bars, P'gh.....	<b>2.90</b>	2.55	2.55	2.10	
Hot-rolled strip, Pittsburgh.....	<b>2.40</b>	2.15	2.15	1.85	
Cold-rolled strip, Pittsburgh.....	<b>3.20</b>	2.85	2.85	2.60	
Hot-rolled annealed sheets, No. 24, Pittsburgh.....	<b>3.15</b>	2.80	2.80	2.40	
Hot-rolled annealed sheets, No. 24, Gary.....	<b>3.25</b>	2.90	2.90	2.50	
Sheets, galv., No. 24, P'gh.....	<b>3.80</b>	3.40	3.40	3.10	
Sheets, galv., No. 24, Gary.....	<b>3.90</b>	3.50	3.50	3.20	
Hot-rolled sheets, No. 10, Pittsburgh.....	<b>2.40</b>	2.15	2.15	1.85	
Hot-rolled sheets, No. 10, Gary.....	<b>2.50</b>	2.25	2.25	1.95	
Cold-rolled sheets, No. 20, Pittsburgh.....	<b>3.55</b>	3.25	3.25	2.95	
Cold-rolled sheets, No. 20, Gary.....	<b>3.65</b>	3.35	3.35	3.05	
Wire nails, Pittsburgh.....	<b>2.75</b>	2.50	2.25	2.10	
Wire nails, Chicago dist. mill.	<b>2.80</b>	2.55	2.30	2.15	
Plain wire, Pittsburgh.....	<b>2.90</b>	2.60	2.60	2.30	
Plain wire, Chicago dist. mill	<b>2.95</b>	2.65	2.65	2.35	
Barbed wire, galv., P'gh.....	<b>3.40</b>	3.05	2.75	2.50	
Barbed wire, galv., Chicago dist. mill.....	<b>3.45</b>	3.10	2.80	2.55	
Tin plate, 100-lb. box, P'gh..	\$4.85	\$4.85	\$4.85	\$5.25	

\* Practically the equivalent of previous quotation owing to new method of quoting effective Jan. 1, 1937.

On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

## The Iron Age Composite Prices

### Finished Steel

March 9, 1937	2.605c. a Lb.
One week ago	2.330c.
One month ago	2.330c.
One year ago	2.084c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strips. These products represent 85 per cent of the United States output.

	HIGH	LOW
1937.....	2.605c, Mar. 9; 2.330c, Mar. 2	
1936.....	2.330c, Dec. 28; 2.084c, Mar. 10	
1935.....	2.130c, Oct. 1; 2.124c, Jan. 8	
1934.....	2.199c, April 24; 2.008c, Jan. 2	
1933.....	2.015c, Oct. 3; 1.867c, April 18	
1932.....	1.977c, Oct. 4; 1.926c, Feb. 2	
1931.....	2.037c, Jan. 13; 1.945c, Dec. 29	
1930.....	2.273c, Jan. 7; 2.018c, Dec. 9	
1929.....	2.317c, April 2; 2.273c, Oct. 29	
1928.....	2.286c, Dec. 11; 2.217c, July 17	
1927.....	2.402c, Jan. 4; 2.212c, Nov. 1	

### Pig Iron

	Per Gross Ton:	Mar. 9, 1937	Mar. 2, 1937	Feb. 9, 1937	Mar. 10, 1936
No. 2 fdy., Philadelphia.....	<b>\$25.76</b>	\$23.76	\$22.76	\$21.3132	
No. 2, Valley furnace.....	<b>24.00</b>	22.00	21.00	19.50	
No. 2, Southern Cinti.....	<b>23.69</b>	21.69	20.69	20.2007	
No. 2, Birmingham.....	<b>20.38</b>	18.38	17.38	15.50	
No. 2, foundry, Chicago*.....	<b>24.00</b>	22.00	21.00	19.50	
Basic, del'd eastern Pa.....	<b>25.26</b>	23.26	22.26	20.8132	
Basic, Valley furnace.....	<b>23.50</b>	21.50	20.50	19.00	
Malleable, Chicago*.....	<b>24.00</b>	22.00	21.00	19.50	
Malleable, Valley.....	<b>24.00</b>	22.00	21.00	19.50	
L. S. charcoal, Chicago.....	<b>29.54</b>	27.54	26.54	25.2528	
Ferromanganese, seab'd, car- lots.....		80.00	80.00	80.00	75.00

† This quotation is subject to a deduction of 38c, a ton for phosphorus content of 70 per cent or higher.

\* The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

### Scrap

	Per Gross Ton:	Heavy melting steel, P'gh.....	\$23.25	\$21.75	\$19.50	\$15.75
Heavy melting steel, Phila.....	<b>19.75</b>	18.75	18.50	13.75		
Heavy melting steel, Ch'go.....	20.25	20.25	19.00	14.75		
Carwheels, Chicago.....	19.50	19.50	18.50	14.00		
Carwheels, Philadelphia.....	18.50	18.50	18.50	14.75		
No. 1 cast, Pittsburgh.....	<b>19.25</b>	18.75	17.75	15.25		
No. 1 cast, Philadelphia.....	<b>19.75</b>	19.25	19.25	14.25		
No. 1 cast, Ch'go (net ton).....	17.00	17.00	16.00	13.00		
No. 1 RR. wrot., Phila.....	18.75	18.75	17.25	13.25		
No. 1 RR. wrot., Ch'go (net)	18.50	18.50	16.75	13.25		

### Coke, Connellsville

	Per Net Ton at Oven:	Furnace coke, prompt.....	\$4.25	\$4.25	\$4.00	\$3.65
Foundry coke, prompt.....		4.50	4.50	4.50	4.45	

### Metals

	Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Electrolytic copper, Conn.....	<b>16.25</b>	15.00	13.00	9.25	
Lake copper, New York.....	<b>16.37 ½</b>	15.12 ½	13.12 ½	9.37 ½	
Tin (Straits), New York.....	<b>63.50</b>	54.75	50.25	48.30	
Zinc, East St. Louis.....	<b>7.50</b>	6.80	6.40	4.90	
Zinc, New York.....	<b>7.85</b>	7.15	6.75	5.27 ½	
Lead, St. Louis.....	<b>7.35</b>	6.85	5.85	4.45	
Lead, New York.....	<b>7.50</b>	7.00	6.00	4.60	
Antimony (Asiatic), N. Y....	<b>16.75</b>	16.50	14.25	13.25	

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	HIGH	LOW
1937.....	\$23.25, Mar. 9; \$20.25, Feb. 16	\$21.08, Mar. 9; \$17.92, Jan. 4
1936.....	19.73, Nov. 24; 18.73, Aug. 11	17.75, Dec. 21; 12.67, June 9
1935.....	18.84, Nov. 5; 17.83, May 14	13.42, Dec. 10; 10.33, April 23
1934.....	17.90, May 1; 16.90, Jan. 27	13.00, Mar. 13; 9.50, Sept. 25
1933.....	16.90, Dec. 5; 13.56, Jan. 3	12.25, Aug. 8; 6.75, Jan. 3
1932.....	14.81, Jan. 5; 13.56, Dec. 6	8.50, Jan. 12; 6.43, July 5
1931.....	15.90, Jan. 6; 14.79, Dec. 15	11.33, Jan. 6; 8.50, Dec. 29
1930.....	18.21, Jan. 7; 15.90, Dec. 16	15.00, Feb. 18; 11.25, Dec. 9
1929.....	18.71, May 14; 18.21, Dec. 17	17.58, Jan. 29; 14.08, Dec. 3
1928.....	18.59, Nov. 27; 17.04, July 24	16.50, Dec. 31; 13.08, July 2
1927.....	19.71, Jan. 4; 17.54, Nov. 1	15.25, Jan. 11; 13.08, Nov. 22

being scrutinized carefully and balanced with production schedules in order to insure delivery by the end of the quarter. Bookings at the beginning of last week were heavy in anticipation of higher prices and demand was miscellaneous in character, although heavier than usual releases came from the automobile industry.

### Cold-Finished Bars

A \$7 spot advance covering shipments to the end of June was announced last week. At the same time Detroit was made a basing point for cold-finished carbon bars, with an f.o.b. price of 2.95c. a lb. Backlogs are fairly heavy and still average six to eight weeks. Previous to the price advance, specifications were in good volume and while some of this was undoubtedly anticipatory buying, mills are still being pressed for delivery, indicating a good consumption rate.

### Reinforcing Bars

Billet reinforcing bars have been advanced \$6 a ton, effective upon announcement made last week. One producer of rail steel reinforcing bars has named higher prices to the consumer, reflecting the same increase as billet steel makers. No outstanding awards have been made within the past week as most consumers' and producers' attention was taken up with the price situation.

### Steel Sheet Piling

Awards for the past few weeks have been light but numerous projects are in the blueprint stage and will undoubtedly become inquiries within the next 30 days. It is understood that the volume of this business is greater than at the same time last year. The leading producer has advanced steel sheet piling \$4 a ton with the higher quotations becoming effective immediately.

### Plates and Sheets

Carnegie-Illinois Steel Corp. late last week announced a spot increase of \$4 a ton on plates and shapes for delivery up to and including June 30. Since producers must realize the new prices as soon as possible owing to high labor costs, no mills are attempting to fill up their books with low-priced tonnages. In fact, practically all producers have been out of the market for at least a week at first quarter prices. The business that is being taken against first quarter contracts is limited to the extent to which the mills can make delivery by the end of the quarter. Inquiries in the past week showed a satisfactory proportion of privately financed projects and with

many Government jobs to be let in the near future, the outlook for plate and shape activity is exceptionally bright. Backlogs are at the highest point in several years and orders in February exceeded shipments. Considerable miscellaneous tonnage was booked early last week before price announcements were made.

### Railroad Buying

Northern Pacific has awarded 2000 cars as follows: 750 50-ton gondolas to the Pressed Steel Car Co., 250 70-ton gondolas to American Car & Foundry Co., 500 50-ton flat cars to Bethlehem Steel Corp. and 500 50-ton box cars to Pacific Car & Foundry. Most of this business will be fabricated in Mid-Western shops. Price advances on railroad material, effective upon announcement last week, show rails up \$3.50 a ton, angle splice bars up \$2, light rails up \$5, spikes up \$5, tie plates up \$4 and track bolts up \$7. Forged steel axles have been advanced \$4 a ton, while increases on various wheels run from \$1 to \$4.

### Strip

Higher prices are in effect and reflect a \$5 a ton advance on hot-rolled strip and \$7 on cold-rolled strip. Faced with the necessity of off-setting a large increase in their wage bill, producers went out of the market at first quarter prices last week. Specifications involving some anticipatory buying were in good volume during the earlier part of last week. Mill backlogs are better than five to six weeks, since incoming business has been ahead of shipments. Demand has been emanating from all sources with a fair amount of steel being taken by electrical appliance manufacturers, bed makers and automotive interests.

### Tubular Products

Discounts on standard pipe have been revised and reflect a five-point increase on black and a six-point increase on galvanized. Approximate advance on oil-country goods runs \$5 a ton. Hot-rolled boiler tubes are up about 7½ per cent with cold-drawn tubes up approximately 10 per cent. Hot-rolled mechanical tubing, 6 in. and under is advanced approximately 7½ per cent, while cold-drawn tubing is up about 15 per cent. With commitments placed before the price advance late last week heavy enough to keep all mills busy during the rest of this quarter, producers went out of the market at first quarter prices, in most cases

a day or two before pipe cards were distributed. A 60-mi. pipe line involving 3000 tons of 6-in. seamless pipe was recently awarded to Jones & Laughlin Steel Corp. The line is for the Barnsdall Oil Co., Tulsa, Okla., and will be used for the transportation of crude oil within the vicinity of Corpus Christi, Tex.

### Wire Products

Close upon the heels of the price announcements made over a week ago, further advances were put into effect late last week. As was the case the previous week, new prices were effective immediately, subject to change without notice and without contract privileges. Wire rods are up \$4 a ton. The differential for sizes over 9/32 in. to and including 47/64 has been increased \$1 making it \$5. Wire nails were advanced \$5, barbed wire \$7, bale ties \$5, woven wire fence \$7, bright wire, spring wire, annealed fence wire and galvanized fence wire were marked up \$6 a ton. On account of higher raw material costs and increased wages, producers have made no attempt to fill up their books with low-priced tonnages, nor is there any disposition to be exceptionally active in soliciting business at the newly announced prices.

### Sheets

The anticipated price advance in sheets materialized last week on a spot basis for shipment up to and including June 30. Increases have been made in gage extras on hot-rolled annealed sheets No. 24 gage base, cold-rolled sheets No. 20 gage base, and enameling sheets. The changes which apply to the lighter gages run from 5c. to 25c. a 100 lb. on cold-rolled and enameling sheets, and from 5c. to 10c. a 100 lb. on hot-rolled annealed sheets. Pickling extras on hot-rolled sheets have been reduced.

### Tin Plate

General line can bookings and packers' specifications are still in good volume as tin plate operations continue at 98 per cent. Mills have a fair-sized backlog and there is little chance that the high operating rate will recede in the near future. A fair percentage of the present business being transacted is for export. The shortage of steel in England, which is reportedly causing some tin plate mills to shut down, may result in increasing foreign inquiry for tin mill products.



# CHICAGO

... Price increases have not discouraged demand.

• • •

... Many buyers covered through April.

• • •

... Operations rise to 82 per cent of capacity.

**C**HICAGO, March 9. — With the leading producer operating at a rate of 74 per cent, up two points from the preceding week, ingot output is currently engaging approximately 82 per cent of the capacity of the entire district. General demand for steel in the district is being well maintained and although it is yet too early to determine the effect of the higher quotations upon new buying few steel makers anticipate any downturn of importance. The delivery situation shows little or no change.

Plates and shapes for the railroads and for car builders continue to feature the heavy materials, although considerable tonnage of material for building projects is believed to be in the making here. In any event the absence of new privately financed enterprises is causing local producers no concern in view of the large tonnages of bars, plates and shapes still to be released for railroad work. Sheet makers have not been able to improve their deliveries to any appreciable extent and little new business can be shipped much before mid-April or May. Many users are believed to be fairly well covered over the next 60 days, however, because of the substantial buying which preceded the price advance of \$5 to \$8 a ton. No new strip business is being accepted for March shipment and on cold-rolled items deliveries run well into the second quarter. Strip consumption among leading users is reported running at the best rate of the year.

Warehouse business continues to benefit in some instances from the inability of mills to deliver certain items within the period desired by consumers who find nearby needs exceeding previous estimates of requirements. Prices are again out of line with mill quotations as a result of the advance in the latter, and jobber quotations will shortly

be revised upward. In general, warehouse business in the Chicago area is well ahead of a year ago.

### Pig Iron

Prices have been marked up another \$2 above the \$1 increase made effective Feb. 23. No. 2 foundry iron is now quoted \$24, Chicago furnace, and \$24.50 Duluth, with other grades advanced similarly. New prices are for spot and second quarter delivery, but the volume of business being booked is still limited to some extent by the condition of sellers' books. Not much improvement has been noted in furnace stocks.

### Reinforcing Bars

Although considerable work which should break soon is being figured in this area, current demand appears to be moderate. Some additional warehouse business is reported, and steel makers still have comfortable backloggs. Operations on the whole are well maintained around recent levels.

### Cast Iron Pipe

Seasonal influences are asserting themselves in some areas, and sellers report a better inquiry. Jobs, however, are not particularly large, reflecting the current situation with respect to municipal activity. Chicago will use about 2355 tons, which should be closed during the next fortnight.

### Bars

Shipments will be maintained at the present high rate throughout the remainder of the month, with some increase probable if steel makers can accede to urgent demands from automotive, farm tool and implement manufacturers. The problem of protection at old prices has again arisen, and general practice probably will be to protect identified projects only to the end of the month following that in which price was quoted. The new

price of 2.50c. per lb. applies immediately on all new business.

### Plates

The new base price of 2.30c. per lb. goes into effect immediately, but local mills find themselves without space for March deliveries. As in bars, identified projects will be protected until the end of the month following quotation, but specifications must be received within three months. Car builders are still taking material at an undiminished rate, but lighter gages are also in good demand. Northern Pacific Railroad has awarded 2000 gondola cars as follows, 750 to Pressed Steel Car, 250 to American Car & Foundry, 500 to Bethlehem Steel and 500 to Pacific Car & Foundry. All the cars are of 50-ton capacity.

### Rails

Although new business is currently confined to small fill-in tonnages, operations are being maintained at the rate of the preceding week and probably will continue at that pace throughout March. Pressure for delivery is becoming more urgent in some cases owing to favorable weather for track-laying operations. Standard 60-lb. rails are currently quoted at \$42.50 per gross ton, and light rails have been advanced \$5 a ton.

### Structural Material

Bridge work continues to predominate in this market, with 4785 tons awarded. Texas Highway bridges will require 1495 tons and a Sheffield, Ala., power house will take 1000 tons. These jobs went to North Texas Iron & Steel Co. and Milwaukee Bridge Co., respectively. New quotations on hot-rolled carbon shapes is 2.03c. per lb., Chicago.

### Wire Products

Another advance following the recent line-up with other products has been made effective on immediate and second-quarter business. New prices are \$5 a ton higher and thus brings standard wire nails to \$2.75 per keg and plain wire to 2.90c. per lb. Consumer requirements of manufacturers' wire show no signs of abating, and few if any mills can deliver materials within 60 days.

### Sheets

Pressure for sheets appears to be as urgent as ever, particularly in the case of automobile and farm implement manufacturers. Although a considerable amount of the recent buying is believed to have been in anticipation of the \$5 to \$8 per ton increase, consumption among leading users continues to gain.



**...Awards of 710 tons  
—3000 tons in new  
projects.**

**AWARDS**

**Boston**, 100 tons, WPA army base work to Joseph T. Ryerson & Son, Inc.

**Dunkirk, N. Y.**, 200 tons, Nickel Plate Railroad grade crossing.

**Chester County, Pa.**, 100 tons, highway work, to Bethlehem Steel Co.

**Luzerne County, Pa.**, 110 tons, highway work, to Concrete Steel Co.

**Huntingdon County, Pa.**, 200 tons, highway work, to Bethlehem Steel Co.

**NEW REINFORCING BAR PROJECTS**

**Turners Falls, Mass.**, 560 tons, Gill Montague State bridge.

**New York**, 1400 tons, under-river contract, Queens Midtown Tunnel; bids late in March or early in April.

**Denver**, 221 tons, seven bridges; bids opened.

**Sacramento**, 500 tons, supply buildings for Sacramento airport; bids March 25.

**Los Angeles**, 320 tons, two bridges across Big Tujunga Wash; bids March 25.



**...Warehouse price advances imminent.**

• • •

**...Large structural projects up for bids.**

**S**AN FRANCISCO, March 9.—The 10c. per hr. rise in base labor rates and establishment of a 40-hr. week with time-and-a-half for overtime for all employees, effective March 16 in major Pacific Coast steel plants, commanded major interest last week. Reflecting these changes, all price advances on all forms of steel have gone into effect, and warehouse prices are expected to follow within the next two weeks. It has been predicted that within two months general price increases on all industrial products will be in force.

A new Sacramento airport project was announced and bids open March 25 on the \$1,000,000 supply building project. This job involves approximately 500 tons of bars and a somewhat larger amount of

structural steel. This is the second part of the airport program, the general contract for the first portion went to McDonald & Kahn, Inc., and called for 5000 tons of shapes and 250 tons of reinforcing steel. The steel awards have not yet been announced.

At Seattle, bids will be opened April 1 on 5500 tons of galvanized structural steel for the Skagit transmission line No. 2, covering 116 miles between Newhalem and Seattle. Total cost is estimated at \$715,000. Bids have been opened for the construction of seven bridges near Denver involving 560 tons of shapes.

Awards for the week were light, with a letting of 600 tons of shapes for a Soundview pulp addition at Everett, Wash., to Isaacson Iron Works leading the market. Jobs under 100 tons, however, are keeping the market active.



**...Reduction of duty on iron and steel products not likely to give relief.**

• • •

**...Some works idle because of lack of materials.**

**ONDON**, March 9 (By Cable).—

The government's decision to remove import duty on pig iron and reduce the duty on iron and steel products imported with quota certificate and certificate of origin from 20 to 10 per cent is not likely to cause marked relief, because the supply position in other producing countries is still difficult and there is little surplus available for additional export.

The entire pig iron output has been sold three months ahead and makers are refusing business beyond that time. Some foundries face stoppage because of lack of material. Revised prices are due June 1.

The release of additional tonnages of Continental semi-finished steel for the United Kingdom is expected shortly. Meanwhile several rerollers are idle pending the receipt of further supplies. Steel consumers are anxious to place business for the second half, but producers are refusing to accept orders, because of the uncertainty over the price of raw materials.

Constructional and other works are held up by shortages.

There is good home and export demand for tin plate, but works are operating only intermittently, with unfilled orders totaling 7,250,000 boxes. Prices asked are 2s. to 3s. 6d. over the official minima.

Sales of Continental iron and steel are very limited, but the supply position is believed to be easing.

English prices of iron bars have been raised 27s. 6d. Continental gold prices have been raised an average of 12s. 6d. for merchant bars and sections. Plate and sheet prices will be considered at a meeting this week.

## Brazil Developing Export Trade Bauxite

**T**HAT Brazil has begun the development of an export trade in bauxite is indicated in a report to the Commerce Department from Assistant American Trade Commissioner A. A. Barrington, Rio de Janeiro. During the first nine months of 1936, shipments abroad of this item totaled 3906 metric tons, valued at approximately \$50,000, statistics show. The bulk of these exports were consigned to Argentina with smaller shipments going to Germany and England. The newly developed bauxite export trade, it is pointed out, is being carried on by one concern located in Sao Paulo which is said to control 80 per cent of the estimated deposits (1,700,000 tons) of the Pocos de Caldas, Minas Geraes district.

## Navy Opens Navy Bids for Copper

**B**IDS were opened Wednesday by the Bureau of Supplies and Accounts, Navy Department, for six lots of grade A copper ingots; totaling 3,000,000 lb., of which 1,600,000 lb. will be for the Washington Navy yard, 1,000,000 lb. to be Lake copper. The award of contracts will be made by telegraph as soon as practicable. The Navy yards are reported to be in pressing need of the copper, supplies of which have been held up because of refusal of makers to bid under the terms of the Walsh-Healey act.

Bids for the following lots, delivered at the Navy yards, have been requested: Portsmouth, N. H., 500,000 lb.; Brooklyn, 300,000 lb.; Philadelphia, 400,000 lb.; Washington, 600,000 lb.; Norfolk, Va. (Portsmouth), 200,000 lb.; Washington, 1,000,000 lb.



# .. PHILADELPHIA ..

*... Price advances have not discouraged demand.*

• • •  
*... Sellers experiencing one of the busiest periods in history.*  
• • •

*... Operations unchanged at 60 per cent of capacity.*

PHILADELPHIA, March 9.—Salesmen here report that they are experiencing their most hectic market period since the war. Thursday and Friday of last week and Monday of this week were particularly complicated by hundreds of telephone calls from customers trying to have tonnages accepted at the last minute at first quarter prices. Most efforts were fruitless, however, as few sales offices would consider any basis other than "prices in effect at time of shipment." Today all orders being taken, regardless of when they may be delivered, are going at second quarter prices, and sellers in nearly all products, excepting some pig iron dealers, have closed business at the new levels.

Fresh demand does not seem to have lessened to an appreciable degree, and mills have not yet had an opportunity to reduce their ever-increasing backlog of orders. Deliveries of plates have probably been extended in the past week more than any other single product, and are now available in anywhere from five to eleven weeks. Only a few mills are able to accommodate much sheet tonnage next quarter, some being practically sold up already for the entire period. In addition, strip, wire, rods, nails and pipe are tied up for much of the quarter. About 20,000 tons monthly will be added to rod and bar capacity when Bethlehem's Sparrows Point high-speed continuous mill, now under construction, is completed.

Completely surprised by last week's announcements concerning wage increases, hour reductions, and, in one instance, recognition of the union to bargain for its own members, local mills have, this past week, been discussing similar actions. Although no formal decisions have yet been made, it is

practically certain that they will grant a 40-hr. week to employees, with time-and-a-half for overtime, and will increase base labor rates 10c. an hr., with proportionate advances for skilled and semi-skilled labor. As of today, the problem of union recognition has made its appearance in this district only at the Lebanon, Pa., plant of the Bethlehem Steel Co., where about 3000 workers have been on strike since last Thursday. According to a statement Monday from J. H. Edmonds, general manager, the wage dispute was cleared up at a meeting with employee representatives (a 10c.-an-hr. increase was given to all classes of labor, time-and-a-half for overtime, 40-hr. week), but he was unable to say when the plant would be reopened (it has been closed since the strike began). The company has not yet met workers' demands for union recognition. Some of the striking Lebanon employees on Monday journeyed to Bethlehem's Steelton, Pa., plant in what was apparently an effort to induce workers there to go out on strike, but advices from Steelton indicate that they confined their work to passing out union literature and did not attempt to interfere with operations.

Operations in this district continue at 60 per cent of capacity.

## Pig Iron

The \$2-a-ton advance announced last week has been put into effect by all sellers here, and some have taken orders at the new high price for shipment during second quarter, although it is understood that not much iron is available other than for shipment against contracts. The flurry of buying occasioned two weeks ago by the \$1-a-ton advance enabled a number of consumers to cover at the old \$23 base, so that not much buying is

expected at the current prices until late March or early April. Foreign inquiry is still in the market, but local producers evidently have all of that type business they care to handle, now that a domestic iron scarcity is becoming apparent.

## Plates and Sheets

The past week has brought out the heaviest demand for plates that has been seen in years. Apparently emanating from wide and varied sources, these new orders have caused backlogs to be extended considerably so that deliveries are now being promised in from five to eleven weeks, as compared with three to eight weeks a week ago. Much material is being required for pipe, which is currently in great demand, and shipbuilding is also a factor, about 1500 tons of plates for the two Philadelphia & Norfolk boats having been placed recently. Black pipe was boosted \$10 a ton, and galvanized \$12. There seems to be no end to the orders for sheets. The congestion is so great that already two offices are able to take business only in a few sizes for next quarter, and the earliest possible delivery time is somewhere around six or seven weeks, with the exception of stock sizes. Although foreign countries are still avidly interested in flat-rolled products, practically all of this business has come from domestic sources. Gage extras on light hot-rolled and hot-rolled annealed sheets increased from \$1 to \$3 a ton, cold-rolled sheets and vitre-namel from \$1 to \$5 a ton, while pickling extras were lowered from \$1 to \$2, depending on the gage.

## Shapes and Bars

The Lehigh Structural Steel Co. has been awarded 2200 tons of shapes for the Philadelphia Electric Co. job, and Bethlehem Steel Co. obtained 1100 tons for an addition in Huntington, W. Va., to the Owens-Illinois Glass Co. plant there, while Belmont Iron Works was awarded 220 tons on the same job. A 320-ton bridge in Sullivan County went to Phoenix Bridge Co. Shapes, which are now \$4 a ton higher, can be delivered in from four to six weeks. Only a few small jobs involving reinforcing bars have been placed.

## Imports

The following iron and steel imports were received here during the past week: 9 tons of manganese ore from France; 1644 tons of pig iron from British India; 50 tons of steel bands, 4 tons of steel hoops, 74 tons of steel bars and 149 tons of structural shapes from Belgium.



## ....ST. LOUIS....

... Consumers buy at higher price levels.  
• • •

... Ingot operations near capacity.

**S**T. LOUIS, March 9.—Finished iron and steel prices have advanced from \$2 to \$8 a ton for second quarter delivery, effective on Saturday. Considerable tonnage already has been placed with mills for certain items, especially sheets, subject to second quarter price levels. Additional buying continues, following the advances, as consumers of steel are so eager to get supplies that they seemingly are not concerned with price. Generally speaking, it is a question of getting deliveries, and price means nothing.

Gage Structural Steel Co., Chicago, has been awarded 500 tons of structural steel for a St. Louis Independent Packing Co. building. The situation in the bridge and building construction field is dull, reflecting a lack of new Federal and private projects.

Pig iron prices for second quarter were advanced \$2 a ton on March 6, and this change was followed by some buying by melters. The previous advance of \$1 a ton, made effective immediately last week, meant nothing, as makers had nothing to sell. The melt in the St. Louis area continues very near peak levels. Ingot operations are at 85 per cent of capacity.

Open-hearth operations in this district are the same as last week, with 29 active furnaces at Bethlehem's Lackawanna plant, 7 at Republic Steel Corp., and 2 at Wickwire Spencer Steel Co.

A considerable volume of small fabricated structural and small reinforcing bar jobs is moving, but few sizable lots have been listed. Among the latter was a 200-ton grade crossing job at Dunkirk for the Nickel Plate Railroad. A Lehigh Valley grade crossing elimination at Lodi will approximate \$160,000, but the volume of bars involved is not known. An unknown tonnage likewise is involved in a municipal reservoir at Erie, Pa.

A 150-ton reinforcing bar job at the Rochester incinerator is believed to have been placed, but it is not known whether this business has come to Buffalo or went to a Rochester fabricator.

Just before the increase in steel prices, there was another wave of new buying. Last week's bookings were heavy in all general lines.

Directors of the Republic Steel Corp. and the Gulf States Steel Co. last week ratified the plan for merging the two companies and the only remaining step is ratification by Gulf States stockholders, which will probably take place at the annual meeting on March 29.

The Tenth Avenue foundry of the Goslin-Birmingham Mfg. Co. was damaged by fire last week. A strike at the Birmingham Stove & Range Co., which lasted nearly a month, has been settled.



## ...BOSTON...

... Pig iron \$2 higher.  
... Hardware makers busy.

## ..BIRMINGHAM..

... Wages and prices increase.  
• • •

... Four Sloss - Sheffield furnaces on.

**B**IRMINGHAM, March 9.—Steel prices advanced last week, concurrent with the announcement of higher wages. Plates and shapes went up \$4 a ton; bars \$5; sheets, from \$5 to \$8. Wire products and pig iron were increased the preceding week. Pig iron, now on a \$20 base, is the highest since January, 1927.

Effective March 16, wages will be increased by iron and steel producers. These increases will range between 10 per cent to 15 per cent in most cases, and will affect approximately 22,000 workers in the district.

Sloss-Sheffield Steel & Iron Co. blew in its No. 4 furnace at North Birmingham last Tuesday. This company is now operating four stacks and consequently is on a full pig iron production basis.

The additional Sloss-Sheffield furnaces raises the district's active total to 16, the largest number since June, 1930.

Steel production is steady and unchanged. Last week 17 open hearths were refining steel; schedules this week call for the same number.

**B**OSTON, March 9.—The Mystic Iron Works and all other furnaces soliciting New England foundry business have advanced pig iron prices \$2 a ton. The Mystic quotation is now \$25.75 a ton base on cars at Everett. The new prices apply to iron for delivery up to and including June 30. Some foundries, figuring that it will be impossible to obtain iron later at any price, have placed tonnages at the new prices for shipment at the convenience of the furnace. The buying movement, however, has not gathered momentum, although total sales the past week, since the price advance, has run into four figures.

Following a brief period of less activity due to inventory taking, labor disputes, etc., New England industrially is going ahead again with indications of hitting a new recovery high level before April 1. The general belief is that the building trades will show the largest percentage of business increase during the next six months. Already New England builders' hardware manufacturers are far behind on deliveries.

Reinforcing steel bars have been advanced \$6 a ton to 2.60c. a lb. base Buffalo and 2.55c., base Pittsburgh. Warehouse stocks are badly broken, especially those of squares.

One of the largest steel mills, after announcing a general advance in prices, withdrew quotations on most products. It is now doing business at prices ruling at the date of shipment.



## ....BUFFALO....

... Open-hearth operations unchanged.  
• • •

... Small fabricating work plentiful.

**B**UFFALO, March 9.—Increases in pig iron prices have brought the Buffalo base on the No. 2 plain foundry grade to \$24; on malleable to \$24.50; and on basic to \$23. The new prices are effective immediately. This is the third price increase this year, a 50c. rise having been effective Jan. 1, and a \$1 rise the latter part of February.



## ... CLEVELAND ...

... Youngstown operations higher; Cleveland-Lorain lower.

... Iron ore advanced 45c. a ton.

... Consumers rush in orders.

CLEVELAND, March 9.—Prices on steel products have been advanced from \$3 to \$8 a ton for the second quarter by practically all producers. The higher prices named by the Carnegie-Illinois Steel Corp. late last week on its products have been adopted by other steel makers, and quotations on various other products have been marked up correspondingly to cover the increase in wages and other costs.

Lake Superior ore has been advanced 45c. a ton. All grades of pig iron are \$2 a ton higher. Of this latter increase, 90c. will be absorbed in the increased cost of ore.

Ingot output in the Youngstown district advanced one point to 86 per cent of capacity this week. In the Cleveland-Lorain district there was a five point decline due to the shutting down of furnaces for repairs.

There are some changes in extras, and there are new extras on sheets. An advance in the gage differential on light cold-rolled sheets results in a total advance of as much as \$11 a ton.

With the announcement of the price advances there was a rush by consumers to get under cover for March shipment for such products as mills could produce this month, particularly for bars, but the mill books were quickly filled with all the tonnage they could take on for the current month. Quite a few bar orders have already been taken at the new price. Demand for sheets continues heavy and mills have little tonnage left for the second quarter. One producer is already entering orders for July delivery at the price prevailing at time of shipment.

An Ohio mill during the week sold sheet bars at \$8 a ton and re-rolling billets at \$6 per ton above the domestic market for export to Japan.

### Pig Iron

Prices have been advanced \$2 a ton on all northern grades for the second quarter and also the Birmingham price on southern iron. Another \$2 a ton advance has also been made on Ohio silvery iron and Bessemer ferrosilicon. Foundry and malleable iron are now \$24 Cleveland and other lake ports and Youngstown. One producer entered orders for 17,000 tons early this week, this covering iron for which inquiry had been made when this producer's books were closed pending announcement of second quarter prices. Shipments are very heavy and are expected to show a gain of 35 per cent this month over February. Consumers' stocks are low.

### Sheets

New prices for the second quarter, which most, if not all, of the mills have already placed in effect, represent advances of \$5 a ton on No. 10 hot-rolled; \$7 on No. 24 hot-rolled annealed; \$6 on cold-rolled; \$8 on galvanized; \$6 on enameling sheets and \$4 to \$7 on electrical sheets. Prices are also increased on some products by new extras. The market continues quite active, many consumers placing orders for delivery late in the second quarter to assure shipments when needed.

New pickling extras have been announced on hot-rolled sheets, these being 17 and 18 gage, 25 cents; 19 and 20 gage, 30 cents; 21 and 22 gage, 35 cents; 23 gage and lighter, 40 cents. These represent advances of from \$1 to \$3 a ton. Changes in extras for sheets pickled in oil or pickled dry represent reductions of \$1 to \$2 a ton on hot-rolled annealed and pickled sheets in some gages. Gage extras on black sheets have been increased, these being 25 gage, 10 cents; 26

gage, 20 cents; 27 gage, 30 cents; 28 gage, 40 cents; 29 gage, 50 cents, and 30 gage, 60 cents.

An advance has been made in the gage differential on cold-rolled and enameling sheets in 23 gage and lighter amounting to from \$1 to \$5 a ton. Some of the mills have adopted new prices on electrical sheets and have changed the base from 28 to 24 gage. The new quotations represent an advance of \$4 a ton for the higher grades and \$7 a ton for the lower-price grades.

### Strip Steel

Hot-rolled strip has been advanced \$5 a ton for the second quarter and cold-rolled strip \$7 by most mills, although one Ohio producer has announced an \$8-a-ton advance on the latter. The Cleveland base is now 3.20 cents on cold-rolled, 3.85 cents on fender stock and 3.85 cents on 20-gage commodity strip. The extra on No. 3 finish for cold-rolled strip for nickel plating has been increased from 25 cents to 75 cents and now includes paper between the sheets.

### Bolts, Nuts and Rivets

Price advances amounting to about 10 per cent on small bolts and 10 to 19 per cent on large bolts and nuts have been announced by a leading manufacturer effective immediately and for the second quarter. An advance of \$7 per ton on large rivets has also been announced. As buyers are under contract, the advance will apply to little business during the current month. The new rivet price is \$3.60 per 100 lb. Pittsburgh and Cleveland and \$3.70 Chicago and Birmingham. Small rivets have been advanced to 70 per cent off list from 70 and 5 per cent discount. Stove bolts are unchanged. New size classifications have been made providing higher prices for bolts and nuts in the larger size. A new list of extras for large rivets has been announced by the Champion Rivet Co., these extras applying to quantities, type of head, and size, making the new prices more in line with the present manufacturing costs.

### Alloy Steel

A \$5-a-ton advance has been made on alloy bars and billets, blooms and slab for the second quarter. Cold-finished alloy bars have been advanced \$7 a ton, increasing from \$10 to \$12 the differential between cold-finished and hot-rolled bars.

### Bars, Plates and Shapes

With the \$5 a ton advance, steel bars now are 2.50c. Cleveland. Alloy steel bars and rail steel merchant

bars have been advanced \$5 a ton. Billet steel reinforcing bars are \$6 a ton higher, and now are being quoted at 2.60c., Cleveland, by distributors. No announcement has been made on rail steel reinforcing bars.

The only sizable structural award is 390 tons for an addition to the Cleveland plant of Steel & Tubes Inc.

#### Track Supplies

Spikes have been advanced \$5 a ton to 3.15c., tie plates \$4 to 2.30c., track bolts \$7 a ton to 4.35c., and screw spikes \$4 to 4.80c. Track bolts are now 65-5-5 to jobbers for car lots and 65-5 for less than car lots.

### Wilson Foundry Reorganized

THE Wilson Foundry & Machine Co., Pontiac, Mich., which has been a subsidiary of the Willys-Overland Co., of Toledo, has been reorganized as an independent concern with Charles E. Wilson as president. Mr. Wilson is the son of D. R. Wilson, president up until now, who has resigned so that he can devote his full time to the affairs of Willys-Overland, Inc., of Toledo. C. E. Wilson has been the assistant general manager in charge of production for some years. The Wilson foundry will continue to make and machine all the castings of the Willys-Overland engines and in addition, will undertake a general jobbing business in the automotive industry. Work for Willys-Overland will be done on a contract basis. There are now 750 employees on the payroll, working five days a week.

Other officers of the company include A. E. Weber, vice-president, George P. Waller, secretary-treasurer and R. S. Whipple, assistant secretary and treasurer.

Yellow Truck & Coach Mfg. Co., Pontiac, has purchased 11.6 acres and six buildings from the Wilson foundry. The buildings, which are on Saginaw Street, have 300,000 sq. ft. of floor space and will be used as a service and storage department. Yellow Coach is adding 1000 men to its payroll beginning March 1. The company recently reported 8000 unfilled orders for trucks and 1000 motor coaches.

Campbell, Wyant & Cannon Foundry Co., Muskegon Heights, Mich., and subsidiaries, had 1936 net profit of \$1,045,396 after depreciation, Federal income taxes and surtax on undistributed profits, equivalent to \$3.03 a share on the capital stock outstanding. This compares with net profit in 1935 of \$654,002, or \$1.90 a share on the stock then outstanding.

## John P. Frey of A. F. of L. To Meet Carnegie-Illinois Workers

WASHINGTON, March 9.—With battle lines drawn for control of organized labor, the intense rivalry between the American Federation of Labor and the Committee for Industrial Organization has centered its first definite development on steel. Counter-offensive attacks by the Federation against further penetration of the CIO got under way with the announcement of President William Green that the Federation will institute a strong campaign to organize steel while simultaneously John P. Frey, president of the Federation's metal trades department, prepared to meet in Pittsburgh with the grievance committee of the Carnegie-Illinois Steel Corp.'s employees' representation group.

These developments were made known following a meeting yesterday in Washington of Federation leaders, timed in anticipation of a meeting under way here today of John L. Lewis's CIO. Both sessions, held behind closed doors, were called to plan rival drives to gain supremacy in the field of labor. The Lewis group is planning to stimulate its drive for vertical unionization in mass industries, to confer over growing strike developments and to "consolidate gains in the steel and automotive industries."

The Federation leaders are desperately seeking to offset the CIO campaign as it gathers force and absorbs craft unions which have been long affiliated with A. F. of L.

Frey said he would go to Pittsburgh late today or tomorrow in response to an invitation from the Carnegie-Illinois employee representation group, which, vigorously fighting Lewis's steel workers' organizing committee, said it was prepared to affiliate with the American Federation of Labor and to become a wholly independent organization. Ralph Martin, of the employee representation group, in a telephone message to Frey said that the group was "being made independent of the Carnegie-Illinois Steel Corp." It was upon this representation, Frey said, that he accepted the invitation to go to Pittsburgh "to talk things over." The grievance committee of the employee representation group has announced that one of its objectives is to obtain concessions for the steel industry's 40,000 white collar workers.

Green's announcement of a cam-

paign to organize mass industries and agriculture was confined to fabricators in the field of steel, but it was evident that Federation craft union heads planned to become active in the producing industry itself. Lewis some time ago announced efforts would be made to organize steel fabricators. Green's move in this field, which apparently Lewis's has not penetrated far as yet, was taken to be a piece of strategy designed to minimize or to cut off Lewis before he had made any considerable headway.

### Improves Aluminum Anodizing Process

A N improvement in the process of anodizing aluminum alloys which not only speeds up the work but results in a better coating, has been developed by R. W. Buzzard, metallurgist at the National Bureau of Standards, Washington. Some of the strong aluminum alloys, of the type known as duralumin, are subject to corrosive attack in the salty air of sea-coast locations, according to the bureau. It was then found that protection against this attack can be obtained by using the alloy as the anode in an electrolytic bath consisting of a solution of chromic acid. By this reaction, an oxide coating is formed on the anode, in contrast to the metal deposit produced on the cathode in electroplating.

Mr. Buzzard found that a definite succession or cycle of voltages was required to produce the best coating in 3 per cent chromic acid solutions. This cycle necessitated discontinuous operation of the bath. Marked improvement was obtained by increasing the chromic acid content from 3 per cent, the usual concentration, to 5 or 10 per cent. The coatings produced were superior in their corrosion-resistance and the conditions of operation were simplified so that continuous operation was possible.

A new firm known as Anglo-American Refractories, Ltd., has just been formed in England as a combination between General Refractories, Ltd., Sheffield, and E. J. Lavino & Co., Philadelphia, to provide means whereby the former may exploit, manufacture, and sell in Europe the fire cements produced by the latter.



# NEW YORK . . .

*... Delivery pressure increases as prices rise.*

• • •

*... Foreign pig iron inquiry very heavy.*

• • •

*... Present backlog guarantee busy second quarter.*

**N**EW YORK, March 9.—Somewhat jolted by the stiff price advances announced last week on practically all grades of steel, most consumers are frantically attempting to get additional business on mill books at old price levels or at least secure March deliveries on orders already on books. There is little likelihood of any mill accepting more business at first quarter quotations—backlogs even now are excessively heavy and for the most part preclude delivery on new commitments before the middle or end of May, particularly for sheets and strip. The situation in all mills is not by any means the same with respect to old orders, either with regard to the volume or the policy in force regarding prices at time of shipment. Whereas several smaller specialized plants fully anticipate complete liquidation of low-priced tonnages by the end of this month, there are admittedly many larger plants pretty well loaded with commitments and identified structure contracts both of which will obviate any large-scale benefit from the new price lists before the end of the second quarter.

As yet, not much completely new business has developed at the higher price schedules. Quite probably there will be some consumer reaction for several weeks, or at least until buyers become acclimated to the higher quotations or find out when and under what conditions orders now on books will be shipped. The lag in new inquiry is generally welcomed by principal sellers, as most of them are badly confused in their attempts to get satisfactory contract shipments for regular customers. At present, about the best delivery promise on new orders of cold-reduced material is 13 to 14 weeks, 15 to 21 weeks on galvanized, and 8 or 9 weeks on tin plate.

Export inquiry was, if anything, accelerated by the rise in domestic quotations. The usual practice of exporters of selling below the market has practically disappeared and, instead, foreign users are being quoted at levels far above domestic prices, and even then not much material is available.

#### *Pig Iron*

Prices moved up \$2 a ton in a general increase last week for both spot and second quarter delivery. However, few producers have any spot iron to sell. Consumers' reaction to the current price level has resulted in no general wave of buying, although this situation is aggravated by the fact that producers are heavily sold and continue to limit offerings. Some customers, however, even though already represented on order books, have inquired for and obtained small tonnages for immediate delivery at the \$2 higher price. The situation is different elsewhere in that furnaces not having any iron to sell are giving customers no relief on current needs, and, in fact, are out of the market with respect to both spot and near-by requirements. Included in the latest advance are the Mystic stack at Everett, Mass., and the Chateaugay Ore & Iron Co. whose quotation on low phosphorous iron at Standish, N. Y., is now \$28.50 a gross ton. With foreign countries apprised of events here, inquiry from such sources has taken a different turn, and a number of countries are now attempting to buy any quantity of iron obtainable here at any price. It is reliably reported that prior to the above-mentioned developments, a Japanese buyer succeeded in purchasing 30,000 metric tons of pig iron in this country for second half-year delivery. This is exclusive of 150,-

000 metric tons bought for shipment by June.

#### *Plates and Sheets*

Many sellers of flat-rolled products hope to realize an almost immediate benefit from the current price advances. Nearly all mills are sold up for the remainder of the quarter, and so are booking orders now only for next quarter shipment and at the higher price, while even those mills that can ship before the end of the month are quoting the new price. Most of the releases currently flowing into sales offices are for consumption on delivery. Of course, fear of a steel strike inspired some stock buying in February, and a few plate sellers believe that new business will slow down considerably in a week or so for this reason.



*... Ingot output advances to 75 per cent.*

• • •

*... Full flood recovery expected soon.*

**C**INCINNATI, March 9.—The pig iron market continues very strong in the face of furnace refusal to accept further first quarter business and a \$2 advance on second quarter commitments. Shipments are heavy since furnaces insist that contracts be complete by April 1. Foundry operations, still restricted by flood rehabilitation, are slowly expanding, but are not yet equal to demand.

Sheet ordering for second quarter continues unabated at greater than capacity rate. New price rates have been announced in keeping with changes in other areas. Semi-finished material is up \$3, hot-rolled strip is up \$5, and galvanized and long ternes are \$8 higher. Other quotations are in keeping with these new rates, while annealed sheets are subject to new gage differentials which, together with base price changes, raise certain grades as much as \$10 a ton.

Kentucky mills are still out, but all units are now in operation at the Wheeling plant in Portsmouth, except the rod mill. Full recovery from the flood is now considered a matter of a few weeks. Northern Kentucky plants are expected to be

completely rehabilitated and in operation by the end of this week. The leading district interest reports capacity operations in all units.

With Portsmouth in production, the ingot output has sharply advanced to about 75 per cent of capacity. Twenty-one out of 34 open hearths are now in operation. Northern Kentucky producers are still out, but several stacks are being heated and production is expected the first of next week.

Foundry coke movement is stronger. Part of this is due to improved melt, although many are replenishing stocks following failure to receive needed fuel during the flood delay.

Steel jobbers have advanced prices on sheets effective at once. Demand is moving upward as industrial needs expand.



**Back God Oil Co.**, Commerce Exchange Building, Oklahoma City, Okla., plans welded steel pipe line from oil field to point near Oklahoma City for crude oil transmission. Cost about \$45,000. E. D. Hill, Insurance Building, is engineer.

**Simrall Pipe Line Corp.**, Mount Pleasant, Mich., has authorized new 6-in. welded steel pipe line from recently opened oil field district in Buckeye Township, Gladwin County, to Mount Pleasant, about 33 miles, for crude oil transmission to refinery of Roosevelt Oil Refining Co., at last noted place. Pumping stations will be installed at points along route for booster service. Cost over \$200,000.

**Commanding Officer**, Ordnance Department, Picatinny Arsenal, Dover, N. J., asks bids until March 15 for 600 ft. of 1½-in. black welded steel pipe, and for 700 ft. of similar pipe, 1¼-in. (Circular 630).

**Sylvania Corp.**, Seneca Street, Oil City, Pa., plans new welded steel pipe line from natural gas field in Alma Township, Allegheny County, to Ellensburg, Pa., and vicinity, about 12 miles, for natural gas transmission to latter points. Cost close to \$100,000.

**Ottumwa Gas Co.**, Ottumwa, Iowa, plans welded steel pipe lines to points in Mahaska and Wapello Counties for natural gas transmission.

**A. O. Smith Corp.**, Milwaukee, has received an order for 2500 tons of 8½-in. welded steel pipe, about 37 miles, from a Central States petroleum interest, the identity of which is not disclosed.

**Barnsdall Refining Corp.**, Tulsa, Okla., plans 6-in. welded steel pipe line from oil properties in Placido oil field, Texas, to Corpus Christi, Tex., about 70 miles, for crude oil transmission to new refinery to be erected on ship channel at latter place. Pumping stations will be built at points along route for booster service. Cost over \$500,000. Contract for pipe, totaling about 3000 tons, has been awarded to Jones & Laughlin Steel Corp.

**United States Engineer Office**, Vicksburg, Miss., closes bids March 15 for six sections of 20-in. inside diameter steel pipe, 50-ft. lengths; also for 12 flanges (Circular 182).

**Central Arizona Light & Power Co.**, Phoenix, Ariz., plans steel pipe lines for

gas transmission, including new lines for extensions in system and for replacements in existing lines. Fund of \$174,000 has been authorized for this and other improvements in gas system during 1937. Edward H. Coe is president.

**Gas Service Corp. of Oklahoma**, Colcord Building, Oklahoma City, Okla., George A. Henshaw, head, plans welded steel pipe line from gas area at Red Oak, Latimer County, Okla., to Talihina, Le Flore County, Okla., for natural gas transmission to latter point, where franchise is being secured. A steel pipe line system will be installed in municipality for distribution.



**Westerly, R. I.**, will ask bids within a week on a \$120,000 water system. Weston & Sampson, 14 Beacon Street, Boston, are engineers.

**Mooresville, N. C.**, plans pipe lines for water system. Fund of \$127,000 is being arranged through Federal aid for this and other waterworks installation, and for sewer system.



### ...Canadian price advances likely.

• • •

### ...Pig iron demand very heavy.

**TORONTO, Ont.**—New business

in the Canadian iron and steel markets is expanding at a steady pace, and mills report sharp increases in backlog. Prices also are showing strength, and further advances in some lines are expected for second quarter. Mills now are accepting orders on some materials only to the end of this month, but it is understood that books for second quarter will be opened during the coming week. The placing of some \$35,000,000 to \$40,000,000 in rail and rolling stock orders is largely responsible for the big improvement in the steel industry, while at the same time the automotive and mining industries also have been placing substantial orders for steel and machinery. Most companies now report backlog at the highest level since 1929, and at the same time state that there is a substantial flow of spot orders from various sources.

Merchant pig iron demand has advanced sharply in the past two or three weeks. Sales now are running around 1500 tons per week, mostly for spot delivery. It is stated that second quarter bookings will exceed those for the first three months of the year. Although no announcement has yet been made of further advance in pig iron prices, it is expected that another step-up may materialize soon and at short notice. February pig iron output, despite the shorter month, practically equalled the January level. Imports continue limited to special grades from the United States.

**Johnsville, S. C.**, plans pipe lines for water system and other waterworks installation, including elevated steel tank and tower. Fund of \$30,000 is being arranged through Federal aid. Ryan Engineering Co., Arcade Building, Columbia, S. C., is consulting engineer.

**Englewood, Tenn.**, plans pipe lines for water system and other waterworks installation. Bond issue of \$35,000 is being arranged. Work is scheduled to begin in spring.

**Lake Villa, Ill.**, closes bids March 19 for pipe for water system and other waterworks equipment, including elevated steel tank and tower. Cost about \$40,000. James Anderson Co., 290 East Deerpath Avenue, Lake Forest, Ill., is consulting engineer.

**Paradise, Kan.**, plans pipe lines for water system and other waterworks installation. Work will begin early in spring. Cost about \$40,000. Paulette & Wilson, Farmers' Union Building, Salina, Kan., and National Reserve Building, Topeka, Kan., are consulting engineers.

**Escanaba, Mich.**, plans about 8000 ft. of various sizes for extensions in water system to points near city limits. A. V. Aaronson is city engineer.

**Rose Hill, N. C.**, plans pipe lines for water system. Fund of \$67,000 is being arranged through Federal aid for this and other waterworks installation.

**Quartermaster**, Fort Robinson, Neb., closes bids March 17 for 14,775 ft. of 2-in. black iron pipe (Proposal 739-10).

**Foreman, Ark.**, plans pipe lines for water system and other waterworks installation. Fund of \$54,000 is being arranged through Federal aid. W. F. Moody & Co., National Standard Building, Little Rock, Ark., are consulting engineers.

**Kansas City, Kan.**, plans extensions in pipe lines for water system for service in Wyandotte County Farms district and other points near city limits. Cost about \$200,000 with operating facilities. Financing is being arranged through Federal aid. Charles A. Haskins & Co., Finance Building, Kansas City, Mo., are consulting engineers.

**San Bernardino, Cal.**, has awarded 142 tons of 4 to 12-in. to National Cast Iron Pipe Co.

**Arcadia, Cal.**, has awarded 260 tons of varied sizes to United States Pipe & Foundry Co.

**Sacramento, Cal.**, will open bids March 16 on 350 tons for Sacramento airport water system.

**South Pasadena, Cal.**, has opened bids on 356 tons of 4 to 12-in. for a water system.

## February Pig Iron Daily

### Output Up 3.4 Per Cent

**O**N the basis of revised returns from companies producing pig iron, actual production of coke pig iron in February was 2,999,218 gross tons, compared with 3,211,500 tons in January. The daily rate last month showed a gain of 3.4 per cent over that of January, or from 103,597 tons to 107,115 tons, and was the highest since October, 1929, when the daily average stood at 115,745 tons.

On March 1, there were 176 furnaces making iron, operating at a rate of 108,720 tons daily, compared with 170 on Feb. 1, producing at the rate of 104,060 tons daily. In addition to the furnace changes given in last week's issue, page 91, two more furnaces were put in blast, the Ashland furnace of the American Rolling Mill Co., and the Rockdale stack of the Tennessee Products Corp.

The number of available furnaces making pig iron has been reduced from 243 to 242 by the dismantling of an Isabella unit of the Carnegie-Illinois Steel Corp.

#### Daily Average Production of Coke Pig Iron

	1937	1936	1935	1934	1933
January	103,597	65,351	47,656	39,201	18,348
February	107,115	62,886	57,448	45,131	19,798
March	...	65,816	57,098	52,243	17,484
April	...	80,125	55,449	57,561	20,787
May	...	85,432	55,713	65,900	23,621
June	...	86,208	51,750	64,338	42,166
½ year	...	74,331	54,138	54,134	24,536
July	...	83,686	49,041	39,510	57,821
August	...	87,475	56,816	34,012	59,142
September	...	91,010	59,216	29,935	50,742
October	...	96,512	63,820	30,679	43,754
November	...	98,246	68,864	31,898	36,174
December	...	100,485	67,950	33,149	38,131
Year	...	83,658	67,556	43,592	26,199

#### Production of Coke Pig Iron and Ferromanganese

	Gross Tons		Ferromanganese	
	Pig Iron*	Pig Iron*	1937	1936
January	3,211,500	2,025,885	23,960	24,766
February	2,999,218	1,823,706	24,228	24,988
March	...	2,040,311	...	22,725
April	...	2,403,683	...	19,667
May	...	2,648,401	...	18,363
June	...	2,586,240	...	17,549
½ year	...	13,528,226	...	128,058
July	...	2,594,268	...	20,205
August	...	2,711,721	...	20,658
September	...	2,730,293	...	15,919
October	...	2,991,887	...	19,305
November	...	2,947,365	...	24,368
December	...	3,115,037	...	25,715
Year	...	30,618,797	...	254,728

\*These totals do not include charcoal pig iron.

†Included in pig iron figures.

#### Merchant Iron Made, Daily Rate

	1937	1936	1935	1934	1933
January	16,106	10,537	3,926	7,800	2,602
February	16,514	11,296	6,288	7,071	2,863
March	...	10,831	7,089	7,197	2,412
April	...	13,897	8,799	8,838	1,908
May	...	12,814	8,441	9,099	3,129
June	...	14,209	7,874	9,499	4,088
July	...	11,619	8,644	7,880	6,783
August	...	12,148	8,194	6,043	7,756
September	...	12,526	10,090	4,986	10,034
October	...	13,645	11,199	5,765	8,634
November	...	14,739	12,503	6,610	7,639
December	...	14,852	13,312	4,399	8,358

#### Production by Districts and Coke Furnaces in Blast

Furnaces	Production (Gross Tons)		March 1	February 1		
	February (28 Days)	January (31 Days)		Number in Blast	Operating Rate, Tons a Day	
<i>New York:</i>						
Buffalo	209,915	227,302	12	7,495	12	7,330
Other New York and Mass.	5,365	5,814	1	190	1	190
<i>Pennsylvania:</i>						
Lehigh Valley	69,019	73,107	6	2,515	5	2,065
Schuylkill Valley	36,581	39,020	3	1,305	3	1,260
Susquehanna and Lebanon Valleys	24,851	25,177	1	890	1	810
Ferromanganese	...	0	0	0	0	0
Pittsburgh District	703,996	755,018	37	25,710	36	24,355
Ferro. and Spiegel	9,323	9,367	2	335	2	360
Shenango Valley	66,350	70,646	4	2,370	4	2,280
Western Pennsylvania	86,065	106,230	5	2,745	6	3,425
Ferro. and Spiegel	12,075	12,730	2	430	2	410
Maryland	120,110	135,837	5	4,290	5	4,380
Wheeling District	145,160	128,946	7	5,185	7	4,645
<i>Ohio:</i>						
Mahoning Valley	303,427	313,904	16	11,185	15	10,360
Central and Northern	236,822	263,222	14	8,460	14	8,490
Southern	40,991	42,511	4	1,715	4	1,615
Illinois and Indiana	595,831	647,156	30	21,880	28	20,875
Michigan and Minnesota	88,685	91,860	6	3,165	6	2,965
Colorado, Missouri and Utah	39,358	43,789	3	1,405	3	1,415
<i>The South:</i>						
Virginia	...	0	0	0	0	0
Ferromanganese	2,830	966	1	100	1	55
Kentucky	5,949	8,900	1	330	0	0
Alabama	195,310	209,998	15	6,975	15	6,775
Tennessee	1,205	...	1	45	0	0
Total	2,999,218	3,211,500	176	108,720	170	104,060

#### Braeburn Strike Settled

PITTSBURGH, March 8. — Operations have been resumed at the Braeburn Alloy Steel Corp. plant closed two weeks ago by strike of its 225 employees. Settlement of the walkout was announced yesterday by T. H. McGraw, president, the company agreeing to recognize the Committee for Industrial Organization as the bargaining agency for the workers. All of the strikers have been rehired, the negotiating committee announced, at a new minimum wage rate of \$5 a day. The walkout was called when six employees were discharged allegedly because of intoxication.

Steel Improvement & Forge Co., Cleveland, is enlarging its plant by the erection of a 150 ft. x 60 ft. addition in which some new machinery equipment will be installed to manufacture finished forged products.



## FABRICATED STEEL

... Lettings advance to 23,100 tons from 10,700 tons last week.

... New projects in better volume at 32,800 tons as against 15,100 tons a week ago.

... Plate awards total 2130 tons.

### NORTH ATLANTIC STATES

**Greenville, N. H.**, 175 tons, bridge, to Boston Iron Works, Inc., Cambridge, Mass.

**Taunton, Mass.**, 125 tons, State hospital Nurses' Home, to West End Iron Works.

**Lancaster, Mass.**, 100 tons, State bridge, to American Bridge Co.

**New York**, 4000 tons, Sheffield pasteurizing plant on West 57th Street, to Post & McCord, fabrication by American Bridge Co.

**New York**, 255 tons, foundations for West Side elevated highway, Spring to Cedar Streets, to Harris Structural Steel Co., Plainfield, N. J.

**New York**, 450 tons, New York Central viaduct under George Washington bridge, to Lehigh Structural Steel Co., Allentown, Pa.

**Brooklyn**, 190 tons, Piel Brothers brewery, to Dreier Structural Steel Co.

**Raybrook, N. Y.**, 300 tons, infirmary building, to Bethlehem Steel Corp.

**Elberon, N. J.**, 135 tons, railroad bridge, to Bethlehem Steel Co.

**Sullivan County, Pa.**, 335 tons, bridge, to Phoenix Bridge Co., Phoenixville, Pa.

**Philadelphia**, 2360 tons, Philadelphia Electric generating station, to Lehigh Structural Steel Co.

**Philadelphia**, 135 tons, addition for Philadelphia Carpet Co., to Norris Iron & Wire Co.

**Philadelphia**, 280 tons, Dock Street freight station, to Belmont Iron Works.

**Pine Grove, Pa.**, 260 tons, bridge, to Lackawanna Steel Construction Corp., Buffalo.

**Corning, N. Y.**, 105 tons, building for Corning Glass Works, to Fort Pitt Bridge Works Co.

### SOUTH AND SOUTHWEST

**State of Virginia**, 675 tons, highway bridge over Elizabeth River, to Virginia Bridge Co., Roanoke, Va.

**Benwood, W. Va.**, 650 tons, Wheeling Steel Corp. warehouse, to Ingalls Iron Works Co., Birmingham.

**Wheeling, W. Va.**, 340 tons, post office, to Pittsburgh-Des Moines Steel Co.

**Huntington, W. Va.**, 1300 tons, addition to Owens-Illinois Glass Co. plant; 1100 tons to Bethlehem Steel Co., and 200 tons to Belmont Iron Works.

**Kingsport, Tenn.**, 730 tons, mill buildings, to Converse Bridge & Steel Co., Chattanooga, Tenn.

**New York**, 4000 tons, under-river contract, Queens Midtown tunnel; bids late in March or early in April.

**New York**, 600 tons, express highway viaduct, West 186th Street to West 196th Street, New York Central Railroad.

**New York**, 3700 tons, Sixth Avenue subway, West Ninth to West 18th Streets.

**New York**, 1400 tons, Washington Irving high school.

**New York**, 600 tons, public school No. 152.

**New York**, 400 tons, alterations, East River station, Consolidated Edison Co.

**Dresden, N. Y.**, 800 tons, power house, New York State Electric & Gas Corp.

**Albany, N. Y.**, 700 tons, extension to factory for Albany Felt Co.

**Silver Creek, N. Y.**, 900 tons, Pennsylvania Railroad bridges.

**Darlington, N. J.**, 500 tons, Immaculate Conception Seminary building.

**Seward, Pa.**, 400 tons, Seward power plant addition, Pennsylvania Electric Co.

**State of Pennsylvania**, 425 tons, 11 bridges; bids March 12 at Harrisburg.

### THE SOUTH

**Guntersville Dam, Ga.**, 495 tons, spillway gates, TVA project; bids March 22.

**Miami, Fla.**, 1200 tons, changes to Honda and Moser Channel bridges, Overseas Road and Toll Bridge District.

### CENTRAL STATES

**Cleveland**, 1000 tons, hockey rink, Cleveland Hockey, Inc.

**Cleveland**, 1000 tons, strip mill slab yard, Republic Steel Corp.

**Fremont, Ohio**, 1000 tons, plant and office building, H. J. Heinz Co.

**Defiance, Ohio**, 365 tons, State highway bridge; W. P. Townsend Co., Greenville, Ohio, low bidder.

**Richmond, Ind.**, 1300 tons, building for Wayne Works.

**Chicago**, 250 tons, theater building, Esquire Theatre Corp.

### WESTERN STATES

**Casper, Wyo.**, 200 tons spillway gates, Specification 726, for Bureau of Reclamation.

**Denver**, 560 tons, seven bridges; bids opened.

**Oakland, Cal.**, 160 tons, erection of substation; bids opened.

**Seattle**, 5500 tons galvanized shapes, transmission towers for Skagit line; bids April 1.

### FABRICATED PLATES

#### AWARDS

**Worcester, Mass.**, 100 tons, oil tanks, to Hammon Iron Works, Warren, Ohio.

**Passaic and Kearny, N. J.**, 209 tons, tanks for Solar Oil Co., to an unnamed bidder.

**Port Newark, N. J.**, 730 tons, vegetable oil tanks for Swift & Co., to Hammond Iron Works, Warren, Pa.

**Langley Field, Va.**, 900 tons, wind tunnel for National Advisory Commission, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

**State of Louisiana**, 265 tons, caissons for Atchafalaya River bridge, to Darby Corp., Kansas City.

**Oostburg, Wis.**, 125 tons, elevated water tank, to Pittsburgh-Des Moines Steel Co.

### NEW PROJECTS

**Los Angeles**, 100 tons, elbows and tees for main pumps in Colorado River aqueduct pumping plants; bids March 22.



## NON-FERROUS.

*... Domestic copper raised to 16 $\frac{1}{4}$ c., Connecticut Valley.*

• • •

*... Runaway market in tin, as enormous buying shoots price above 63.00c.*

NEW YORK, March 9.—Pressure from abroad practically forced producers here to raise the domestic copper quotation yesterday, and electrolytic metal accordingly was boosted 1 $\frac{1}{4}$ c. to 16.25c. a lb., delivered

Connecticut Valley. The quotation continues partly nominal, however, as some producers are selling only in extreme limited fashion. Even at the former 15.00c. level for copper, consumers were unable to purchase the tonnages demanded, and,

### The Week's Prices. Cents Per Pound for Early Delivery

	Mar. 3	Mar. 4	Mar. 5	Mar. 6	Mar. 8	Mar. 9
Electrolytic copper, Conn.*	15.00	15.00	15.00	15.00	16.25	16.25
Lake copper, N. Y.	15.12 $\frac{1}{2}$ c.	15.12 $\frac{1}{2}$ c.	15.12 $\frac{1}{2}$ c.	15.12 $\frac{1}{2}$ c.	16.37 $\frac{1}{2}$ c.	16.37 $\frac{1}{2}$ c.
Straits tin, spot, New York	56.87 $\frac{1}{2}$ c.	57.12 $\frac{1}{2}$ c.	58.00	...	59.87 $\frac{1}{2}$ c.	63.50
Zinc, East St. Louis	7.00	7.00	7.00	7.00	7.50	7.50
Zinc, New York	7.35	7.35	7.35	7.35	7.85	7.85
Lead, St. Louis	6.85	6.85	6.85	6.85	7.10	7.35
Lead, New York	7.00	7.00	7.00	7.00	7.25	7.50

\*Delivered Connecticut Valley; price 1/4c. lower delivered in New York.

†Nominal.

Aluminum, virgin 99 per cent plus 20.00c.-21.00c. a lb. delivered.  
Aluminum No. 12 remelt No. 2 standard, in carloads, 17.00c. a lb. delivered.  
Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.  
Antimony, Asiatic, 16.75c. a lb., New York.  
Quicksilver, \$90.00 to \$92.00 per flask of 76 lb.  
Brass ingots, commercial 85-5-5-5, 16.75c. a lb. delivered; in Middle West 1/4c. a lb. is added on orders for less than 40,000 lb.

### From New York Warehouse

#### Delivered Prices, Base per Lb.

Tin, Straits pig	66.00c. to 67.00c.
Tin, bar	68.00c. to 70.00c.
Copper, Lake	16.50c. to 17.50c.†
Copper, electrolytic	16.50c. to 17.50c.†
Copper, castings	16.25c. to 17.25c.†
*Copper sheets, hot-rolled	22.62 $\frac{1}{2}$ c.†
*High brass sheets	20.12 $\frac{1}{2}$ c.†
*Seamless brass tubes	22.87 $\frac{1}{2}$ c.†
*Seamless copper tubes	23.37 $\frac{1}{2}$ c.†
*Brass rods	16.50c.†
Zinc, slabs	7.75c. to 8.75c.
Zinc, sheets (No. 9), casks, 1200 lb. and over	12.75c.
Lead, American pig	8.00c. to 9.00c.
Lead, bar	9.00c. to 10.00c.
Lead, sheets, cut	8.75c.
Antimony, Asiatic	17.50c. to 18.50c.
Alum., virgin, 99 per cent plus	24.30c.
Alum., No. 1 for remelting, 98 to 99 per cent	19.50c. to 21.00c.
Solder 1/2 and 1/4	35.00c. to 36.00c.
Babbitt metal, commercial grades	25.00c. to 65.00c.

†Nominal.

\*These prices, which are also for delivery from Chicago and Cleveland warehouses, are quoted with 33 $\frac{1}{2}$  per cent allowed off for extras, except copper tubes and brass rods, on which allowance is 40 per cent.

### From Cleveland Warehouse

#### Delivered Prices per Lb.

Tin, Straits pig	64.00c.
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with a higher price currently in effect, and hectic conditions prevailing abroad, there is no knowing what may next ensue. Volume of export orders has naturally been considerable, with business of this nature today being based on sales at from 16.75c. to 17.00c. c.i.f., Europe.

### Zinc

The market for Prime Western grade advanced \$4 a ton on March 2 to 7.00c. a lb., East St. Louis. Yesterday there was a further increase of \$10 a ton to 7.50c., East St. Louis. Producers hoped by this means to discourage consumer buying in view of the extreme scarcity of material available for consumption, but buyers grew more active than ever, and, while commitments for near-by shipment were out of the question, substantial contracting for futures did occur. Conditions at the moment are about unchanged, with sales being made as far ahead as for third quarter.

### Lead

Pig lead advanced in price \$5 a ton yesterday and \$5 a ton additionally today, establishing current quotations at 7.50c. to 7.55c. a lb., New York, and 7.35c., St. Louis. Higher price for lead abroad was held immediately responsible for the advance here, but consumers bought heavily and left no doubt of the market's being firmly established. Considerable tonnage of metal obtained from producers' reserve accumulations is currently going into consumption as production has for some time lagged behind demand.

### Tin

Prices moved up steeply during the week on enormous volume of buying by consumers, particularly tin plate makers, who had noticeably overstayed the market. Initiation of the advance resulted partly from sympathy of tin with other metals and partly from action of the International Tin Committee on March 5 in renewing quotas at 100 per cent against expectations that restriction would be abandoned. Consumers, both here and abroad, bought heavily throughout the rise. The market at New York for spot Straits metal today is quotable at 63.50c. a lb., against 55.12 $\frac{1}{2}$ c. a week ago, indicating in some measure the intense activity of the past five to six days. London prices, too, are sharply higher, with standard spot selling this morning for £276 10s. and prompt for £275 15s. The Eastern price was £272 5s.



# IRON AND STEEL SCRAP

*... Composite advances 83c. to \$21.08 a gross ton.*

• • •

*... Pittsburgh market develops "runaway prices".*

TAKING its cue from a \$3 markup in pig iron prices and very heavy increases in finished steel quotations, the scrap markets all over the country are displaying added bullishness. At Pittsburgh, No. 1 steel is \$1.50 higher, with the top limit not yet in sight, in eastern Pennsylvania quotations are up \$1, and the Chicago market, although currently unchanged, is bolstered by a very strong undertone. All these changes are reflected in an 83c. advance in the composite figure, thereby raising THE IRON AGE average for heavy melting steel to \$21.08, the highest level reached by scrap since the post-War period. Export buying is still very active, although actual deliveries to docks are being delayed by railroad embargoes which in turn reflect congestion of cars at principal ports. Boats are none too plentiful, and shippers are having difficulty in securing sufficient bottoms to take care of their commitments.

### Pittsburgh

The scrap situation here bears all the earmarks of a "runaway market." Moderate-sized tonnages of No. 1 steel and compressed sheets have been sold into consumption within the past week at \$23.50 a ton. Previous to these transactions, some No. 1 had been sold at \$23 a ton. With the market up \$1.50 over last week and No. 1 quotable at \$23 to \$23.50, those dealers who are able to obtain hydraulic bundles are freely paying \$23. Notwithstanding the exceptionally high prices being paid, scrap is still far from plentiful, and in view of the local operating rates which are at practical capacity, there is no evidence that the situation will ease to any extent in the immediate future. Railroad heavy melting steel was recently sold into consumption at \$24 a ton. Specialties continue strong. The skyrocketing of No. 1 steel still leaves the normal spread between that and No. 2 steel far out of line, and the same may be said for other items.

### Chicago

Although the local situation was inclined last week to be a trifle easier,

with considerable variance of opinion as to the market on heavy melting automobile, heavy melting and shoveling steels, it has firmed up again. Brokers report, however, that they do not have to pay over \$20.50 per ton for the No. 1 heavy melting grade. Mills continue to regulate shipments, and leading producers and leading independents are temporarily out of market. Cast iron borings and short shoveling turnings have turned somewhat stronger.

### Cleveland

The market has again advanced sharply on steel making grades, No. 1 heavy melting steel being marked up \$1.50 a ton in both the Cleveland and Youngstown districts. Blast furnace grades are 25c. a ton higher. Heavy melting steel has brought \$20 and blast furnace scrap \$14 in Cleveland. The No. 1 steel offered by the New York Central Railroad last week brought \$22 from a Youngstown consumer. This malleable scrap went to a Michigan foundry at \$23. The only purchases reported by consumers are small lots. Recent price advances have resulted in scrap coming out in increased volume, and two Valley district plants are holding up shipments.

### Philadelphia

The price of No. 1 steel has been increased \$1 to \$19.50 to \$20 a ton. Sales have been made at both levels. No. 2 is quoted at a flat \$18.50. Domestic consumers are not especially active, but a rising Pittsburgh market makes it probable that nothing less than \$20 will bring out material in a substantial quantity. The embargo on shipments to Port Richmond is still in force, although three boats are loading there now. Export quotations though said to be strengthening, are necessarily nominal as a reflection of the embargo. No. 1 steel for delivery to Bethlehem from north Jersey is bringing \$19.

### Buffalo

Apparently no new business is out, but the market is very strong with dealers in some cases paying the market price to fulfill contracts to mills. Oddly enough, one mill, which two weeks ago bought No. 2 steel at \$17.50, is now restricting shipments. It is

believed that mills have been encouraged by the open weather to look for an early opening of navigation. Dealers have offered as high as \$17.75 for No. 2 steel. Cupola cast has sold as high as \$18.25, and 3-ft. rails have brought \$23 to \$24.

### Boston

Scrap interest centers in the export market. Brokers are doing practically nothing in the way of shipments to Pennsylvania. Exporters have raised prices on Nos. 1 and 2 steel 50c. a ton, No. 1 being \$17 a ton, delivered army base, and No. 2 is \$16. Railroads continue to embargo two of the most active exporters at the army base, as well as at Portland, Me. A boat is loading 3000 tons of scrap at Providence. Loading was held up at that port for a while the past week due to a truck drivers' strike, but resumed last Friday.

### St. Louis

This market started another upward swing this week, advances of 50c. to \$2 a ton being recorded. An East Side melter has purchased 3000 to 4000 tons of heavy melting steel at present price levels. The Missouri Pacific has issued a list of 100 carloads of scrap.

### Cincinnati

Market activity is confined mostly to coverage on old commitments. The undertone in this area is still getting stronger. Dealers' bids on important items have advanced 50c. to \$1.50. Material is closely held, and bids on offerings are active and bullish. Early buying is in the offing as a reflection of mounting mill activity.

### Detroit

This market continues strong, and every item has moved up 50c. a ton, and in certain instances \$1. Brokers are extremely bullish and attribute rises principally to out-of-town buying. Local consumers are still practically out of the market. No large lists were issued during the past week, but yard buying by brokers has been substantial.

### New York

General increase of \$2 a ton in pig iron quotations last week contributed to a further advance in scrap prices. Dealers here raised their buying price for No. 1 steel 50c. a gross ton for both domestic and export shipment, but while No. 2 for export likewise advanced 50c., the price paid for this material loaded on cars continued unchanged, thereby establishing the domestic quotation for No. 2 at a level \$1.50 beneath the No. 1 price. Mills are said to be trying to contract for more tonnage than dealers have to offer, and dealers' yards in this district are unable to accumulate sufficient supplies. The high prices which have prevailed for some time have increased the number of small collectors who gather scrap at its sources of origin; competition is consequently keen, and large operators are finding it difficult to gather in as much tonnage as would normally fall to them.

## Iron and Steel Scrap Prices

### PITTSBURGH

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$23.00 to \$23.50
Railroad hvy. mltng. .	23.50 to 24.00
No. 2 hvy. mltng. steel.	19.00 to 20.00
No. 2 RR. wrought .	23.00 to 23.50
Scrap rails .	23.50 to 24.00
Rails 3 ft. and under.	26.00 to 26.50
Comp. sheet steel .	23.00 to 23.50
Hand. bundled sheets .	20.00 to 20.50
Hvy. steel axle turn..	21.25 to 21.75
Machine shop turn....	14.50 to 15.00
Short shov. turn....	15.50 to 16.00
Mixed bor. & turn....	14.00 to 14.50
Cast iron borings .	14.50 to 15.00
Cast iron carwheels .	19.50 to 20.00
Hvy. breakable cast....	16.00 to 16.50
No. 1 cast .	19.00 to 19.50
RR. knuckles & cplrs.	26.00 to 26.50
Rail coil & leaf springs	26.00 to 26.50
Rolled steel wheels...	26.00 to 26.50
Low phos. billet crops .	26.50 to 27.00
Low phos. sh. bar....	26.00 to 26.50
Low phos. punchings .	24.00 to 24.50
Low phos. plate, hvy... .	25.50 to 26.00
Low phos. plate clip. .	24.00 to 24.50
Steel car axles .	25.50 to 26.00

### CLEVELAND

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$19.50 to \$20.00
No. 2 hvy. mltng. steel.	18.00 to 18.50
Comp. sheet steel .	18.50 to 19.00
Light bund. stampings .	15.50 to 16.00
Drop forge flashings...	18.00 to 18.50
Machline shop turn....	13.00 to 13.50
Short shov. turn....	13.50 to 14.00
No. 1 busheling .	18.50 to 19.00
Steel axle turnings .	16.00 to 16.50
Low phos. billet crops .	23.50 to 24.00
Cast iron borings .	13.50 to 14.00
Mixed bor. & turn....	13.50 to 14.00
No. 2 busheling .	13.50 to 14.00
No. 1 cast .	20.50 to 21.00
Railroad grate bars...	12.00 to 12.50
Stove plate .	10.00 to 10.50
Rails under 3 ft. .	24.50 to 25.00
Rails for rolling .	21.50 to 22.00
Railroad malleable .	21.00 to 21.50
Cast iron carwheels....	18.50 to 19.00

### PHILADELPHIA

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$19.50 to \$20.00
No. 2 hvy. mltng. steel.	18.50
Hydraulic bund. new.	18.00 to 18.50
Hydraulic bund. old.	16.00 to 16.50
Steel rails for rolling..	18.50 to 19.00
Cast iron carwheels..	19.00 to 20.00
Hvy. breakable cast ..	18.50 to 19.00
No. 1 cast .	19.50 to 20.00
Stove plate (steel wks.)	15.00 to 15.50
Railroad malleable .	18.50 to 19.00
Machine shop turn....	13.00 to 13.50
No. 1 blast furnace .	11.50 to 12.00
Cast borings .	11.50 to 12.00
Heavy axle turnings..	17.50 to 18.00
No. 1 low phos. hvy... .	24.00 to 24.50
Couplers & knuckles .	24.50 to 25.00
Rolled steel wheels ..	24.50 to 25.00
Steel axles .	24.50 to 25.00
Shafting .	23.00 to 23.50
No. 1 RR. wrought .	18.50 to 19.00
Spec. iron & steel pipe	16.50 to 17.00
No. 1 forge fire .	16.50 to 17.00
Cast borings (chem.).	12.00 to 13.00

### CHICAGO

Delivered to Chicago district consumers:	
Per Gross Ton	
Hvy. mltng. steel .	\$20.00 to \$20.50
Auto. hvy. mltng. steel.	19.00 to 19.50
Alloy free .	18.50 to 19.00
Shoveling steel .	20.00 to 20.50
Hydraul. comp. sheets.	19.50 to 20.00
Drop forge flashings..	16.50 to 17.00
No. 1 busheling .	18.00 to 18.50
Rolled carwheels .	22.00 to 22.50
Railroad tires, cut .	22.25 to 22.75
Railroad leaf springs..	22.00 to 22.50
Axle turnings .	18.50 to 19.00
Steel coup. & knuckles	22.00 to 22.50
Coll springs .	24.00 to 24.50
Axle turn. (elec.) .	19.25 to 19.75
Low phos. punchings .	23.00 to 23.50
Low phos. plates, 12 in. and under .	23.00 to 23.50
Cast iron borings .	11.75 to 12.25
Short shov. turnings..	11.75 to 12.25
Machine shop turn .	11.00 to 11.50
Rerolling rails .	21.50 to 22.00
Steel rails under 3 ft..	22.75 to 23.25
Steel rails under 2 ft. .	23.50 to 24.00
Angle bars, steel .	22.00 to 22.50
Cast iron carwheels .	19.50 to 20.00
Railroad malleable .	22.00 to 22.50
Agric. malleable .	18.75 to 19.25
Iron car axles .	26.50 to 27.00

Per Net Ton	
Steel car axles .	\$23.50 to \$24.00
No. 1 RR. wrought .	18.50 to 19.00
No. 2 RR. wrought .	18.50 to 19.00
No. 2 busheling, old..	9.00 to 9.50
Locomotive tires .	19.50 to 20.00
Pipes and flues .	14.50 to 15.00
No. 1 machinery cast .	17.00 to 17.50
Clean auto. cast .	15.50 to 16.00
No. 1 railroad cast .	15.75 to 16.25
No. 1 agric. cast .	13.50 to 14.00
Stove plate .	12.25 to 12.75
Grate bars .	13.50 to 14.00
Brake shoes .	13.50 to 14.00

### BUFFALO

Per gross ton, f.o.b. consumers' plants:	
Nc. 1 hvy. mltng. steel.	\$19.00 to \$19.50
No. 2 hvy. mltng. steel.	17.50 to 18.00
Scrap rails .	19.00 to 19.50
New hy. b'dled sheet .	17.50 to 18.00
Old hydraul. bundles .	16.50 to 17.00
Drop forge flashings .	16.50 to 17.00
No. 1 busheling .	17.50 to 18.00
Hvy. axle turnings .	13.50 to 14.00
Machine shop turn .	13.00 to 13.50
Knuckles & couplers .	21.50 to 22.00
Coll & leaf springs .	21.50 to 22.00
Rolled steel wheels .	21.50 to 22.00
Low phos. billet crops .	22.00 to 22.50
Shov. turnings .	14.00 to 14.50
Mixed bor. & turn .	13.00 to 13.50
Cast iron borings .	13.00 to 13.50
Steel car axles .	21.50 to 22.00
No. 1 machinery cast .	19.00 to 19.50
No. 1 cupola cast .	18.00 to 18.50
Stove plate .	14.50 to 15.00
Steel rails under 3 ft. .	22.50 to 23.00
Cast iron carwheels .	17.50 to 18.00
Railroad malleable .	19.50 to 22.00
Chemical borings .	14.00 to 14.50

### BIRMINGHAM

Per gross ton delivered to consumer:	
Hvy. melting steel .	\$15.00 to \$15.50
Scrap steel rails .	15.00 to 15.50
Short shov. turnings .	7.50 to 8.00
Stove plate .	8.50 to 9.00
Steel axles .	15.00 to 16.00
Iron axles .	15.00 to 16.00
No. 1 RR. wrought .	12.50 to 13.00
Rails for rolling .	16.00 to 17.00
No. 1 cast .	14.50 to 15.00
Tramcar wheels .	14.00

### ST. LOUIS

Dealer's buying prices per gross ton delivered to consumer:	
Selected hvy. steel .	\$17.75 to \$18.25
No. 1 hvy. melting .	17.25 to 17.75
No. 2 hvy. melting .	16.00 to 16.50
No. 1 locomotive tires .	18.00 to 18.50
Misc. stand.-sec. rails .	18.50 to 19.00
Railroad springs .	21.00 to 21.50
Bundled sheets .	11.00 to 11.50
No. 2 RR. wrought .	17.50 to 18.00
No. 1 busheling .	14.00 to 14.50
Cast bor. & turn .	7.50 to 8.00
Rails for rolling .	19.25 to 19.75
Machine shop turn .	9.00 to 9.50
Heavy turnings .	14.00 to 14.50
Steel car axles .	21.50 to 22.00
Iron car axles .	22.00 to 22.25
No. 1 RR. wrought .	15.00 to 15.50
Steel rails under 3 ft. .	20.00 to 20.50
Steel angle bars .	19.25 to 19.75
Cast iron carwheels .	17.50 to 18.00
No. 1 machinery cast .	13.00 to 13.50
Railroad malleable .	17.50 to 18.00
No. 1 railroad cast .	13.25 to 13.75
Stove plate .	11.25 to 11.75
Agric. malleable .	12.50 to 13.00
Grate bars .	12.00 to 12.50
Brake shoes .	13.00 to 13.50

### CINCINNATI

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel.	\$17.00 to \$17.50
No. 2 hvy. mltng. steel.	18.50 to 19.00
Scrap rails for mltng..	18.50 to 19.00
Loose sheet clippings .	11.50 to 12.00
Bundled sheets .	14.00 to 14.50
Cast iron borings .	10.50 to 11.00
Machine shop turn .	11.50 to 12.00
No. 1 busheling .	14.00 to 14.50
Rails for rolling .	19.50 to 20.00
No. 1 locomotive tires .	16.00 to 16.50
Short rails .	21.50 to 22.00
Cast iron carwheels .	16.00 to 16.50
No. 1 railroad cast .	15.50 to 17.00
No. 1 machinery cast .	16.50 to 17.00
Burnt cast .	11.75 to 12.25
Stove plate .	11.75 to 12.25
Agric. malleable .	16.50 to 17.00
Railroad malleable .	17.50 to 18.00

### DETROIT

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel.	\$16.50 to \$17.00
No. 2 hvy. mltng. steel.	15.50 to 16.00
Borings and turnings .	12.25 to 12.75
Long turnings .	12.50 to 13.00
Short shov. turnings .	13.25 to 13.75
No. 1 machinery cast .	16.00 to 16.50
Automotive cast .	16.75 to 17.25
Hydraul. comp. sheets .	17.50 to 18.00
Stove plate .	11.25 to 11.75
New factory bushel .	16.50 to 17.00
Old No. 2 busheling .	11.25 to 11.75
No. 2 busheling (black fender stock) .	13.00 to 13.50
Sheet clippings .	13.00 to 13.50
Flashings .	16.00 to 16.50
Low phos. plate scrap .	18.50 to 19.00

### YOUNGSTOWN

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$21.00 to \$21.50
Hydraulic bundles .	20.50 to 21.00
Machine shop turn .	15.00 to 15.50
NEW YORK	
Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel.	\$16.50 to \$16.50
No. 2 hvy. mltng. steel.	14.50 to 15.00
Hvy. breakable cast .	14.25 to 14.75
No. 1 machinery cast .	16.75 to 17.25
No. 2 cast .	14.00 to 14.50
Stove plate .	10.75 to 11.25
Steel car axles .	23.00 to 24.00
Shafting .	20.00 to 20.50
No. 1 RR. wrought .	13.50 to 14.00
No. 1 wrought long .	13.50 to 14.00
Spec. iron & steel pipe .	12.00 to 12.50
Rails for rolling .	17.00 to 17.50
Clean steel turnings .	8.75 to 9.25
Cast borings .	8.75 to 9.00
No. 1 blast furnace .	8.75 to 9.00
Cast borings (chem.) .	11.00 to 11.50
Unprepar. yard scrap .	10.50 to 11.00
Per gross ton, delivered local foundries:	
No. 1 machin. cast .</td	

## PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

### SEMI-FINISHED STEEL

#### Billets, Blooms and Slabs

F.o.b Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham. Prices at Duluth are \$2 a ton higher, and delivered Detroit \$3 higher.

*Per Gross Ton*

Rerolling ..... \$37.00  
Forging quality ..... 43.00

#### Sheet Bars

F.o.b. Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

*Per Gross Ton*

Open-hearth or Bessemer ..... \$37.00

#### Skelp

F.o.b. Pittsburgh, Chicago, Youngstown, Buffalo, Coatesville, Pa., Sparrows Point, Md.

*Per Lb.*

Grooved, universal and sheared ..... 2.10c.

#### Wire Rods

(No. 5 to 9/32 in.)

*Per Gross Ton*

F.o.b. Pittsburgh or Cleveland \$47.00  
F.o.b. Chicago, Youngstown or Anderson, Ind. ..... 48.00  
F.o.b. Worcester, Mass. ..... 49.00  
F.o.b. Birmingham ..... 50.00  
F.o.b. San Francisco ..... 56.00  
F.o.b. Galveston ..... 53.00  
Rods over 9/32 in. to 47/64 in., inclusive, \$5 a ton over base.

### BARS, PLATES, SHAPES

#### Iron and Steel Bars

##### Soft Steel

*Base per Lb.*

F.o.b. Pittsburgh ..... 2.45c.  
F.o.b. Chicago or Gary ..... 2.50c.  
F.o.b. Duluth ..... 2.60c.  
Del'd Detroit ..... 2.60c.  
F.o.b. Cleveland ..... 2.50c.  
F.o.b. Buffalo ..... 2.55c.  
Del'd Philadelphia ..... 2.74c.  
Del'd New York ..... 2.78c.  
F.o.b. Birmingham ..... 2.60c.  
F.o.b. cars dock Gulf ports ..... 2.85c.  
F.o.b. cars Pacific ports ..... 3.00c.

##### Rail Steel

(For merchant trade)

F.o.b. Pittsburgh ..... 2.30c.  
F.o.b. Cleveland, Chicago, Gary or Moline, Ill. ..... 2.35c.  
F.o.b. Buffalo ..... 2.40c.  
F.o.b. Birmingham ..... 2.45c.  
F.o.b. cars dock Gulf ports ..... 2.70c.  
F.o.b. cars dock Pacific ports ..... 2.85c.

##### Billet Steel Reinforcing (Straight lengths as quoted by distributors)

F.o.b. Pittsburgh ..... 2.55c.  
F.o.b. Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham ..... 2.60c.  
Del'd Detroit ..... 2.70c.  
F.o.b. cars dock Gulf ports ..... 2.95c.  
F.o.b. cars dock Pacific ports ..... 2.95c.

##### Rail Steel Reinforcing (Straight lengths as quoted by distributors)

F.o.b. Pittsburgh ..... 2.40c.  
F.o.b. Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham ..... 2.45c.  
F.o.b. cars dock Gulf ports ..... 2.80c.  
F.o.b. cars dock Pacific ports ..... 2.80c.

#### Iron

F.o.b. Chicago .....  
F.o.b. Pittsburgh (refined) .....

##### Cold Finished Bars and Shafting\*

*Base per Lb.*

F.o.b. Pittsburgh ..... 2.90c.  
F.o.b. Cleveland, Chicago and Gary ..... 2.95c.  
F.o.b. Buffalo ..... 3.00c.  
F.o.b. Detroit ..... 2.95c.

\* In quantities of 10,000 to 19,999 lb.

#### Plates

*Base per Lb.*

F.o.b. Pittsburgh ..... 2.25c.  
F.o.b. Chicago or Gary ..... 2.30c.  
Del'd Cleveland ..... 2.435c.  
F.o.b. Coatesville or Spar. Pt. ..... 2.35c.  
Del'd Philadelphia ..... 2.435c.  
Del'd New York ..... 2.53c.  
F.o.b. Birmingham ..... 2.40c.

F.o.b. cars dock Gulf ports ..... 2.65c.  
F.o.b. cars dock Pacific ports ..... 2.80c.  
Wrought iron plates, f.o.b. Pittsburgh ..... 3.20c.

#### Floor Plates

F.o.b. Pittsburgh ..... 3.80c.  
F.o.b. Chicago ..... 3.85c.  
F.o.b. Coatesville ..... 3.90c.  
F.o.b. cars dock Gulf ports ..... 4.20c.  
F.o.b. cars dock Pacific ports ..... 4.35c.

#### Structural Shapes

*Base per Lb.*

F.o.b. Pittsburgh ..... 2.25c.  
F.o.b. Chicago ..... 2.30c.  
Del'd Cleveland ..... 2.435c.  
F.o.b. Buffalo or Bethlehem ..... 2.35c.  
Del'd Philadelphia ..... 2.455c.  
Del'd New York ..... 2.505c.  
F.o.b. Birmingham (standard) ..... 2.40c.  
F.o.b. cars dock Gulf ports ..... 2.65c.  
F.o.b. cars dock Pacific ports ..... 2.80c.

#### Steel Sheet Piling

*Base per Lb.*

F.o.b. Pittsburgh ..... 2.60c.  
F.o.b. Chicago or Buffalo ..... 2.70c.  
F.o.b. cars dock Gulf or Pacific Coast ports ..... 3.05c.

### RAILS AND TRACK SUPPLIES

#### F.o.b. Mill

Standard rails, heavier than 60 lb., per gross ton ..... \$42.50  
Angle bars, per 100 lb. ..... 2.80

#### F.o.b. Basing Points

Light rails (from billets) per gross ton ..... \$43.00  
Light rails (from rail steel) per gross ton ..... 42.00

*Base per Lb.*

Spikes ..... 3.15c.  
Tie plates, steel ..... 2.30c.  
Tie plates, Pacific Coast ports ..... 2.40c.  
Track bolts, to steam railroads, 4.35c.  
Track bolts, to jobbers, all sizes (per 100 counts)

65-5 per cent off list

Basing points on light rails are Pittsburgh, Chicago and Birmingham; on spikes and tie plates, Pittsburgh, Chicago, Portsmouth, Ohio, Winton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; on tie plates alone, Steelton, Pa., Buffalo; on spikes alone, Youngstown, Lebanon, Pa., Richmond, Va.

### SHEETS, STRIP, TIN PLATE, TERNE PLATE

#### Sheets

#### Hot Rolled

*Base per Lb.*

No. 10, f.o.b. Pittsburgh ..... 2.40c.  
No. 10, f.o.b. Gary ..... 2.50c.  
No. 10, del'd Detroit ..... 2.60c.  
No. 10, del'd Philadelphia ..... 2.69c.  
No. 10, f.o.b. Birmingham ..... 2.55c.  
No. 10, f.o.b. cars dock Pacific ports ..... 2.95c.

#### Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh ..... 3.15c.  
No. 24, f.o.b. Gary ..... 3.25c.  
No. 24, del'd Detroit ..... 3.35c.  
No. 24, del'd Philadelphia ..... 3.44c.  
No. 24, f.o.b. Birmingham ..... 3.30c.  
No. 24, f.o.b. cars dock Pacific ports ..... 3.80c.  
No. 24, wrought iron, Pittsburgh ..... 4.50c.

#### Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh ..... 3.10c.  
No. 10 gage, f.o.b. Gary ..... 3.20c.  
No. 10 gage, f.o.b. Detroit ..... 3.30c.  
No. 10 gage, del'd Philadelphia ..... 3.39c.  
No. 10 gage, f.o.b. Birmingham ..... 3.25c.  
No. 10 gage, f.o.b. cars dock Pacific ports ..... 3.70c.

#### Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh ..... 3.55c.  
No. 20 gage, f.o.b. Gary ..... 3.65c.  
No. 20 gage, del'd Detroit ..... 3.75c.  
No. 20 gage, del'd Philadelphia ..... 3.84c.  
No. 20 gage, f.o.b. Birmingham ..... 3.70c.  
No. 20 gage, f.o.b. cars, dock, Pacific ports ..... 4.10c.

#### Galvanized Sheets

No. 24 gage, f.o.b. Pittsburgh ..... 3.80c.  
No. 24, f.o.b. Gary ..... 3.90c.  
No. 24, del'd Philadelphia ..... 4.09c.  
No. 24, f.o.b. Birmingham ..... 3.95c.  
No. 24, f.o.b. cars, dock, Pacific ports ..... 4.40c.  
No. 24, wrought iron, Pittsburgh ..... 5.15c.

### Electrical Sheets (f.o.b. Pittsburgh)

	<i>Base per Lb.</i>
Field grade	.35c.
Armature	.70c.
Electrical	.420c.
Special Motor	.510c.
Special Dynamo	.580c.
Transformer	.630c.
Transformer Special	.730c.
Transformer Extra Special	.780c.

Base gage changed from 28 to 24 gage. Gage extras are the same as those applying on hot-rolled, annealed sheets with few exceptions.

Steel Strip in coils—Sheet price plus \$1.00 per sheet extra width extras plus 25c. per 100 lb. for coils.

#### Long Ternes

No. 24, unassorted 8-lb. coating	4.10c.
f.o.b. Pittsburgh	4.20c.
f.o.b. Gary	4.30c.
f.o.b. cars, dock, Pacific ports	4.80c.

#### Vitreous Enameling Stock

No. 20, f.o.b. Pittsburgh	3.50c.
No. 20, f.o.b. Gary	3.60c.
No. 20, f.o.b. Birmingham	4.10c.
No. 20, f.o.b. cars dock Pacific ports	4.10c.

#### Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh, per lb.	3.30c.
No. 28, Gary	3.40c.
No. 28, cars dock Pacific ports, boxed	4.175c.

#### Tin Plate

*Base per Box*

Standard cokes, f.o.b. Pittsburgh district mill	\$4.85
Standard cokes, f.o.b. Gary	4.95

Above quotations practically the equivalent of previous quotations owing to new method of quoting, effective Jan. 1, 1937.

#### Special Coated Manufacturing Ternes

*Per Base Box*

F.o.b. Pittsburgh	\$4.15
F.o.b. Gary	4.25

\* Customary 7½ per cent discount in effect through 1936 discontinued as of Jan. 1, 1937.

#### Terne Plate

(f.o.b. Pittsburgh)

(Per Package, 112 sheets, 20 x 28 in.)	
8-lb. coating I.C.	\$11.00
15-lb. coating I.C.	13.00
20-lb. coating I.C.	14.60
25-lb. coating I.C.	15.00
30-lb. coating I.C.	16.25
40-lb. coating I.C.	18.50

#### Hot-Rolled Hoops, Bands, Strip and Flats under ¼ In.

*Base per Lb.*

All widths up to 24 in., Pittsburgh	2.40c.
All widths up to 24 in., Chicago	2.50c.
All widths up to 24 in., del'd Detroit	2.60c.
All widths up to 24 in., Birmingham	2.55c.
Cooperage stock, Pittsburgh	2.25c.
Cooperage stock, Chicago	2.35c.

#### Cold-Rolled Strip\*

*Base per Lb.*

F.o.b. Pittsburgh	3.20c.
F.o.b. Cleveland	3.20c.
Del'd Chicago	3.48c.
F.o.b. Worcester	3.40c.

\* Carbon 0.25 and less.

#### Cold Rolled Spring Steel

Pittsburgh and

Cleveland Worcester

Carbon 0.25-0.50%	3.20c.	3.40c.
Carbon .51-.75	3.95c.	4.15c.
Carbon .76-1.00	5.70c.	5.90c.
Carbon Over 1.00	7.75c.	7.95c.

#### Fender Stock

No. 14, Pittsb'gh or Cleveland	3.45c.
No. 20, Pittsb'gh or Cleveland	3.85c.

## WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland.)

### To Manufacturing Trade

Per Lb.

Bright wire	.....	.290c.
Spring wire	.....	.350c.
Chicago prices on products sold to the manufacturing trade are \$1 a ton above Pittsburgh or Cleveland. Worcester and Duluth prices are \$2 a ton above, Birmingham \$3 above, and Pacific Coast prices \$9 a ton above Pittsburgh or Cleveland.		
To the Trade		
Base per Keg		
Standard wire nails	.....	.275c.
Smooth coated nails	.....	.275c.
Base per 100 Lb.		
Annealed fence wire	.....	\$3.20
Galvanized fence wire	.....	3.60
Polished staples	.....	3.45
Galvanized staples	.....	3.70
Barbed wire, galvanized	.....	3.40
Twisted barbless wire	.....	3.40
Woven wire fence, base column	74.00	
Single loop fence ties, base column	.....	63.00
Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is \$2 above Pittsburgh); Duluth, Minn., mill prices are \$2 a ton over Pittsburgh except for woven wire fence, which is \$3 over Pittsburgh and Birmingham mill prices are \$3 a ton over Pittsburgh.		
On wire, nails, barbed wire and staples, prices at Houston, Galveston and Corpus Christi, Tex., New Orleans, Lake Charles, La., and Mobile, Ala., are \$6 a ton over Pittsburgh.		
On nails, staples and barbed wire, prices of \$6 a ton above Pittsburgh are also quoted at Beaumont and Orange, Tex.		

## STEEL AND WROUGHT IRON PIPE AND TUBING

### Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

F.o.b. Pittsburgh only on wrought iron pipe.

### Butt Weld

#### Steel      Wrought Iron

In.	Black Galv.	In.	Black Galv.
1/8	52	31	1/4 & 3/8
1/4 to 3/8	55	38 1/2	1/2
1/2	59 1/2	49	3/4
2/3	62 1/2	53	1 & 1 1/4
1 to 3	64 1/2	55	39
		2	23 1/2

### Lap Weld

2	57	47 1/2	2	.....	32 1/2	18
2 1/2 & 3	60	50 1/2	2 1/2 to 3 1/2	33 1/2	20 1/2	
3 1/2 to 6	62	52 1/2	4 to 8	35 1/2	24	
7 & 8	61	50 1/2	9 to 12	28 1/2	15	
9 & 10	60 1/2	50				
11 & 12	59 1/2	49				

### Butt Weld, extra strong, plain ends

1/8	50 1/2	36 1/2	1/4 & 3/8	.....	+7	+39
1/4 to 3/8	52 1/2	40 1/2	1/2	.....	28	13
1/2	57 1/2	48 1/2	3/4	.....	33	18
3/4	61 1/2	52 1/2	1 to 2	39	24 1/2	
1 to 3	63	55				

### Lap Weld, extra strong, plain ends

2	55	46 1/2	2	.....	35 1/2	21 1/2
2 1/2 & 3	59	50 1/2	2 1/2 to 4 1/2	28 1/2		
3 1/2 to 6	62 1/2	54	4 1/2	6 to 40 1/2	28	
7 & 8	61 1/2	51	7 & 8	41 1/2	28 1/2	
9 & 10	60 1/2	50	9 to 12	32	20 1/2	
11 & 12	59 1/2	49				

On butt-weld and lap-weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

### Boiler Tubes

Seamless Steel Commercial Boiler Tubes and Locomotive Tubes

(Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

Cold Drawn Rolled

1 in. o.d.	.....	13 B.W.G.	\$ 9.46	\$ 8.41
1 1/4 in. o.d.	.....	13 B.W.G.	11.21	9.96
1 1/2 in. o.d.	.....	13 B.W.G.	12.38	11.00
1 3/4 in. o.d.	.....	13 B.W.G.	14.09	12.51
2 in. o.d.	.....	13 B.W.G.	15.78	14.02
2 1/4 in. o.d.	.....	13 B.W.G.	17.60	15.63
2 1/2 in. o.d.	.....	12 B.W.G.	19.37	17.21
2 1/2 in. o.d.	.....	12 B.W.G.	21.22	18.85
2 3/4 in. o.d.	.....	12 B.W.G.	22.49	19.98
3 in. o.d.	.....	12 B.W.G.	23.60	20.97
4 1/2 in. o.d.	.....	10 B.W.G.	45.19	40.15
3 1/2 in. o.d.	.....	11 B.W.G.	29.79	26.47
4 in. o.d.	.....	10 B.W.G.	36.98	32.83
5 in. o.d.	.....	9 B.W.G.	56.71	50.38
6 in. o.d.	.....	7 B.W.G.	87.07	77.35

Extra for less-carload quantities:

25,000 lb. or ft. to 30,000 lb. or ft.	5 %
12,000 lb. or ft. to 24,000 lb. or ft.	12 1/2 %
6,000 lb. or ft. to 11,000 lb. or ft.	25 %
2,000 lb. or ft. to 5,000 lb. or ft.	35 %
Under 2,000 lb. or ft.	50 %

## CAST IRON WATER PIPE

Per Net Ton

6-in. and larger, del'd Chicago	\$50.00
6-in. and larger, del'd New York	48.00
6-in. and larger, Birmingham	42.00
6-in. and larger, f.o.b. dock, San Francisco or Los Angeles	50.50
f.o.b. dock, Seattle	50.50
or Los Angeles	53.50
f.o.b. dock, Seattle	53.50

Class "A" and gas pipe, \$3 extra.  
4-in. pipe is \$3 a ton above 6-in.

Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$41, Birmingham, and \$49.50, delivered Chicago; and 4-in. pipe, \$44, Birmingham, and \$52.40 a ton, delivered Chicago.

## BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List

Machine and carriage bolts:	
1/2 in. x 6 in. and smaller	65 and 5*
Larger and longer up to	
1 in.	60 and 10*
1 1/2 in. and larger	60 and 5*
Lag bolts	60 and 10*
Plow bolts, Nos. 1, 2, 3,	
and 7	65 and 5
Hot pressed nuts, and c.p.c.	
and t nuts, square or hex,	
blank or tapped:	
1/2 in. and smaller	65 and 5*
9/16 in. to 1 in. inclusive	60 and 10*
1 1/2 in. and larger	60 and 5*

Jobbers discount on above items, 5 per cent.

\* Less carload lots and less than full container quantity. Less carload lots in full container quantity, an additional 10 per cent discount; carload lots and full container quantity, still another 5 per cent discount.

Semi-finished hexagon nuts, U.S.S. and S.A.E.:

1/2 in. and smaller	60 and 20
9/16 in. to 1 in. inclusive	60 and 15
1 1/2 in. and larger	60 and 12 1/2

Stove bolts in packages, nuts attached

Stove bolts in packages, with nuts separate

Stove bolts in bulk.

On stove bolts freight is allowed to destination on 200 lb. and over.

Large Rivets

(1/2-in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh or Cleveland \$3.60

F.o.b. Chicago or Birmingham 3.70

Small Rivets

(7/16-in. and smaller)

Base per 100 Lb.

F.o.b. Pittsburgh ..... 70

F.o.b. Cleveland ..... 70

F.o.b. Chicago and Birmingham ..... 70

Cap and Set Screws

(Freight allowed up to but not exceeding 65c. per 100 lb. on lots of 200 lb. or more)

Per Cent Off List

Milled cap screws, 1 in. dia. and smaller	50 and 10
Milled standard set screws, case hardened, 1 in. dia. and smaller	75
Milled headless set screws, cut thread 1/4 in. and smaller	75
Upset hex. head cap screws U.S.S. or S.A.E. thread, 1 in. and smaller	60
Upset set screws, cup and oval points	75
Milled studs	65

Alloy and Stainless Steel

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem.

Base price, \$60 a gross ton.

Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.

Open-hearth grade, base

Delivered, Detroit

Series

Differential

Numbers per 100 lb.

2000 (1/2% Nickel) ..... \$0.25

2100 (1 1/2% Nickel) ..... 0.55

2300 (3 1/2% Nickel) ..... 1.50

2500 (5% Nickel) ..... 2.25

3100 Nickel Chromium ..... 0.55

3200 Nickel Chromium ..... 1.35

3300 Nickel Chromium ..... 3.80

3400 Nickel Chromium ..... 3.20

4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum) ..... 0.50

4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum) ..... 0.70

4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum (1.50 to 2.00 Nickel) ..... 1.05

5100 Chromium Steel (0.60 to 0.90 Chromium) ..... 0.35

5100 Chromium Steel (0.80 to 1.10 Chromium) ..... 0.45

6100 Chromium Vanadium Bar 1.10c.

6100 Chromium Vanadium Spring Steel ..... 0.70

Chromium Nickel Vanadium ..... 1.40

Carbon Vanadium ..... 0.85

These prices are for hot-rolled steel bars. The differential for most grades in electric turned steel is 50c. higher. The differential for cold-drawn bars 1/2c. per lb. higher with separate extras. Blooms, billets and slabs under 4x4 in. or equivalent are sold on the bar base. Slabs with a section area of 16 in. and 2 1/2 in. thick or over take the billet base. Sections 4x4 in. to 10x10 in. or equivalent carry a gross ton price, which is the net price for bars for the same analysis. Larger sizes carry extras.

## CORROSION & HEAT RESISTANT ALLOYS

(Base prices, cents per lb. f.o.b. Pittsburgh)

### Chrome-Nickel

No. 304 No. 302

Forging billets ..... 19.55c.

Bars ..... 24c.

Plates ..... 28c.

## IRON AND STEEL WAREHOUSE PRICES

### PITTSBURGH

	<i>Base per Lb.</i>
Plates .....	3.40c.
Structural shapes .....	3.40c.
Soft steel bars and small shapes .....	3.30c.
Reinforcing steel bars .....	3.30c.
Cold-finished and screw stock:	
Rounds and hexagons .....	3.80c.
Squares and flats .....	3.80c.
Hot rolled strip incl. 3/16 in. thick, under 24 in. wide .....	3.50c.
Hoops .....	4.00c.
Hot-rolled annealed sheets (No. 24), 10 or more bundles .....	4.15c.
Galv. sheets (No. 24), 10 or more bundles .....	4.75c.
Hot-rolled sheets (No. 10) .....	3.50c.
Galv. corrug. sheets (No. 28), per square (more than 3750 lb.) .....	\$3.94
Spikes, large .....	3.50c.

#### *Per Cent Off List*

Track bolts, all sizes, per 100 count .....	60
Machine bolts, 100 count .....	65-5
Carriage bolts, 100 count .....	65-5
Nuts, all styles, 100 count .....	65-5
Large rivets, base per 100 lb. ....	\$3.75
Wire, black, soft ann'l'd, base per 100 lb. ....	3.15c.
Wire, galv. soft, base per 100 lb. ....	3.55c.
Common wire nails, per keg. ....	2.50c.
Cement coated nails, per keg. ....	2.50c.

On plates, structural, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 3999 lb.

\*Delivered in Pittsburgh switching district.

### CHICAGO

	<i>Base per Lb.</i>
Plates and structural shapes..	3.45c.
Soft steel bars, rounds .....	3.35c.
Soft steel bars, squares and hexagons .....	3.50c.
Cold-fin. steel bars:	
Rounds and hexagons .....	3.95c.
Flats and squares .....	3.95c.
Hot-rolled strip .....	3.60c.
Hot-rolled annealed sheets (No. 24) .....	4.25c.
Galv. sheets (No. 24) .....	4.85c.
Spikes (keg lots) .....	4.00c.
Track bolts (keg lots) .....	5.10c.
Rivets, structural (keg lots) .....	4.10c.
Rivets, boiler (keg lots) .....	4.20c.

#### *Per Cent Off List*

Machine bolts .....	*65
Carriage bolts .....	*65
Lag screws .....	*65
Hot-pressed nuts, sq. tap or blank .....	*65
Hot-pressed nuts, hex. tap or blank .....	*65
Hex. head cap screws .....	60
Cut point set screws .....	75 and 10
Flat head bright wood screws .....	62 and 20
Spring coppers .....	55
Stove bolts in full packages.....	72½
Rd. hd. tank rivets, 7/16 in. and smaller .....	57½
Wrought washers .....	\$4.00 off list
Black ann'l'd wire per 100 lb. to mfg. trade .....	\$4.05
Com. wire nails, 15 kegs or more .....	2.70c.
Cement c't'd nails, 15 kegs or more .....	2.70c.

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 3999 lb. All prices are f.o.b. consumers' plants within the Chicago switching district.

\*These are quotations delivered to city trade for quantities of 100 lb. or more. For lots of less than 100 lb., the quotation is 60 per cent off. Discounts applying to country trade are 70 per cent off, f.o.b. Chicago, with full or partial freight allowed up to 50c. per 100 lb.

### NEW YORK

	<i>Base per Lb.</i>
Plates, 1/4 in. and heavier....	3.65c.
Structural shapes .....	3.62c.
Soft steel bars, rounds .....	3.62c.
Iron bars, Swed. char-coal .....	6.75c. to 7.00c.
Cold-fin. shafting and screw stock:	
Rounds and hexagons .....	4.22c.
Flats and squares .....	4.22c.
Cold-rolled; strip, soft and quarter hard .....	3.57c.

## IRON AND STEEL WAREHOUSE PRICES

### CLEVELAND

	<i>Base per Lb.</i>
Plates and struc. shapes .....	3.56c.
Soft steel bars .....	3.25c.
†Reinforc. steel bars .....	2.25c.
†Cold-finished steel bars .....	3.95c.
Flat-rolled steel under 1/4 in. ....	3.66c.
Cold-finished strip .....	†3.25c.
Hot-rolled annealed sheets (No. 24) .....	4.31c.
Galvanized sheets (No. 24) .....	4.91c.
Hot-rolled sheets (No. 10) .....	3.66c.
Hot-rolled 3/16 in. 24 to 48 in. wide sheets .....	3.66c.
*Black ann'l'd wire, per 100 lb. ....	\$3.10
*No. 9 galv. wire, per 100 lb. ....	3.50
*Com. wire nails, base per keg. ....	2.70c.

*Per Cent Off List*

Large ..... .65 and 10 |

Nuts, 100 count ..... .65 |

†Outside delivery 10c. less.

\*For 5000 lb. or less.

†Plus switching and carriage charges and quantity differentials up to 50c.

### CINCINNATI

	<i>Base per Lb.</i>
Plates and struc. shapes .....	3.95c.
Floor plates .....	5.85c.
Bars, rounds, flats and angles .....	4.05c.
Other shapes .....	4.20c.
Rail steel reinforce. bars .....	3.40c.
Hoops and bands, 3/16 in. and lighter .....	4.25c.
Cold-finished bars .....	4.50c.
Hot-rolled annealed sheets (No. 24) 3500 lb. or more .....	4.25c.
Galv. sheets (No. 24) 3750 lb. or more .....	4.07c.
Galvanized sheets (No. 24) over 3750 lb. ....	4.90c.
Hot-rolled sheets (No. 10) .....	4.00c.
Small rivets .....	.55 per cent off list
No. 9 ann'l'd wire, per 100 lb. ....	(1000 lb. or over) ... \$2.88
Com. wire nails, base per keg: Any quantity less than carload. ....	3.04
Cement c't'd nails, base 100-lb. keg .....	3.50
Chain. lin. per 100 lb. ....	8.35

*Net per 100 Ft.*

Seamless steel boiler tubes, 2-in. ....	\$20.37
4-in. ....	48.14
Lap-welded steel boiler tubes, 2-in. ....	19.35
4-in. ....	45.32

### BUFFALO

	<i>Base per Lb.</i>
Plates .....	3.62c.
Struc. shapes .....	3.50c.
Soft steel bars .....	3.40c.
Reinforcing bars .....	2.75c.
Cold-fin. flats and sq. ....	4.00c.
Rounds and hex. ....	4.00c.
Cold-rolled strip steel .....	3.44c.
Hot-rolled annealed sheets (No. 24) .....	4.45c.
Heavy hot-rolled sheets (3/16 in., 24 to 48 in. wide) .....	3.72c.
Galv. sheet (No. 24) .....	5.05c.
Bands .....	3.72c.
Hoops .....	3.72c.
Heavy hot-rolled sheets .....	3.47c.
Com. wire nails, base per keg. ....	\$3.00
Black wire, base per 100 lb. ....	(2500-lb. lots or under) ... 3.95c.
(Over 2500 lb.) .....	3.85c.

### BOSTON

	<i>Base per Lb.</i>
Channels, angles .....	4.20c.
Tees and zees, under 3" .....	4.45c.
H beams and shapes .....	4.07c.
Plates - Sheared, tank, and univ. mill. 1/4 in. thick and heavier .....	4.08c.
Floor plates, diamond pattern .....	6.03c.
Bar and bar shapes (mild steel) .....	4.20c.
Bands 3/16 in. thick and No. 12 ga. incl. ....	4.40 to 5.40
Half rounds, half ovals, ovals and bevels .....	5.45c.
Tire steel .....	5.45c.
Cold-rolled strip steel .....	3.845c.
Cold-finished rounds, squares and hexagons .....	4.65c.
Cold-finished flats .....	4.65c.
Blue annealed sheets, No. 10 ga. ....	3.90c.
One pass cold-rolled sheets No. 24 ga. ....	4.50c.
Galvanized steel sheets, No. 24 ga. ....	5.05c.
Lead coated sheets, No. 24 ga. ....	6.15c.

Price delivered by truck in metropolitan Boston, subject to quantity differentials.

### DETROIT

#### Base per Lb.

Soft steel bars	3.94c.
Structural shapes	3.95c.
Plates	3.95c.
Floor plates	5.85c.
Hot-rolled annealed sheets (No. 24)*	4.69c.
Hot-rolled sheets (No. 10)	3.94c.
Galvanized sheets (No. 24)*	5.40c.
Bands and hoops	4.19c.
†Cold-finished bars	4.30c.
Cold-rolled strip	3.43c.
Hot-rolled alloy steel (S.A.E. 3100 Series)	6.44c.

Quantity differential on bars, plates, structural shapes, bands, hoops, floor plates and heavy hot-rolled: Under 100 lb., 1.50c. over base; 100 to 399 lb., base plus .50c.; 400 to 3999 lb. base; 4000 to 9999 lb., base less .10c.; 10,000 lb. and over, less .15c.

\* Under 400 lb., .50c. over base; 400 to 1499 lb. base; 1500 to 3499 lb., base less .10c.; 3500 lb. and over, base less .18c.

Prices delivered by truck in metropolitan Detroit, subject to quantity differentials covering shipment at one time.

Galvanized and hot-rolled annealed may not be combined to obtain quantity deductions.

### MILWAUKEE

#### Base per Lb.

Plates and structural shapes	3.56c.
Soft steel bars, rounds up to 8 in., flats and fillet angles	3.46c.
Soft steel bars, squares and hexagons	3.61c.
Hot-rolled strip	3.71c.
Hot-rolled annealed sheets (No. 24)	4.36c.
Galvanized sheets (No. 24)	4.96c.
Cold-finished steel bars	4.06c.
Structural rivets (keg lots)	4.31c.
Boiler rivets, cone head (keg lots)	4.31c.
Track spikes (keg lots)	4.21c.
Track bolts (keg lots)	5.31c.
Black annealed wire (No. 14 and heavier)	3.60c.
Common wire nails and cement coated nails 1 to 14 kegs	2.75c.

#### Per Cent Off List

Machine bolts and carriage bolts, $\frac{1}{2} \times 6$ and smaller	65-10
Larger	65
Coach and lag screws	65
Hot-pressed nuts, sq. and hex. tapped or blank (keg lots)	65

Prices given above are delivered Milwaukee.

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 3999 lb. On galvanized and No. 24 hot-rolled annealed sheets the prices given apply on orders of 400 to 1500 lb. On cold-finished bars the prices are for orders of 1000 lb. or more of a size.

### ST. PAUL

#### Base per Lb.

Mild steel bars, rounds	3.60c.
Structural shapes	3.70c.
Plates	3.70c.
Cold-finished bars	4.20c.
Hot-rolled annealed sheets, No. 24	4.50c.
Galvanized sheets, No. 24	5.10c.

On mild steel bars, shapes and plates the base applies on 400 to 14,999 lb. On hot-rolled sheets, galvanized sheets and cold-rolled sheets base applies on 15,000 lb. and over. Base on cold-finished bars is 1000 lb. and over of a size.

### BALTIMORE

#### Base per Lb.

Mild steel bars and small shapes	3.50c.
Structural shapes	3.60c.
Reinforcing bars	prices on application
Plates	3.60c.
Hot-rolled sheets, No. 10	3.45c.
Bands	3.50c.
Hoops	3.75c.
Special threading steel	3.60c.
Diamond pattern floor plates $\frac{1}{4}$ in. and heavier	5.60c.
Galvanized bars, bands and small shapes	6.00c.
Cold-rolled rounds, hexagons squares and flats, 1000 lb. and more	4.15c.

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets the base applies on orders 400 to 3999 lb.

All prices are f.o.b. consumers' plants.

For second zone add 10c. per 100 lb. for trucking.

### PACIFIC COAST

#### Base per Lb.

San Francisco	Los Angeles	Seattle
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Plates, tank and U. M.	3.75c.	4.00c.	3.95c.
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Shapes, standard	3.75c.	4.00c.	3.95c.
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Soft steel bars	3.85c.	4.00c.	4.10c.
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Reinforcing bars, f.o.b. cars dock	2.725c.	2.725c.	3.725c.
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Hot-rolled annealed sheets (No. 24)	4.65c.	4.60c.	4.85c.
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Hot-rolled sheets (No. 10)	3.95c.	4.15c.	4.10c.
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Galv. sheets (No. 24 and lighter)	5.25c.	5.05c.	5.35c.
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Galv. sheets (No. 22 and heavier)	5.50c.	5.20c.	5.35c.
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Cold finished steel	Rounds	6.30c.	6.35c.
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Squares and hexagons	7.55c.	7.60c.	6.60c.
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Flats	8.05c.	8.10c.	7.60c.
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Common wire nails—base per keg less carload	\$3.10	\$3.05	\$3.10
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All items subject to differentials for quantity.

### CHATTANOOGA

#### Base per Lb.

Mild steel bars	3.71c.
Iron bars	3.71c.
Reinforcing bars	3.71c.
Structural shapes	3.81c.
Plates	3.81c.
Hot-rolled sheets No. 10	3.66c.
Hot-rolled annealed sheets, No. 24*	3.56c.
Galvanized sheets No. 24*	4.16c.
Steel bands	3.91c.
Cold-finished bars	4.51c.

\* Plus mill item extra.

### MEMPHIS

#### Base per Lb.

Mild steel bars	3.81c.
Shapes, bar size	3.81c.
Iron bars	3.81c.
Structural shapes	3.91c.
Plates	3.91c.
Hot-rolled sheets, No. 10	3.76c.
Hot-rolled annealed sheets, No. 24	4.66c.
Galvanized sheets, No. 24	5.26c.
Steel bands	4.01c.
Cold-drawn rounds	4.45c.
Cold-drawn flats, squares, hexagons	6.45c.
Structural rivets	4.25c.
Bolts and nuts, per cent off list	60
Small rivets, per cent off list	50

### NEW ORLEANS

#### Base per Lb.

Mild steel bars	3.70c.
Reinforcing bars	3.50c.
Structural shapes	3.80c.
Plates	3.80c.
Hot-rolled sheets, No. 10	3.85c.
Hot-rolled annealed sheets, No. 24	4.55c.
Galvanized sheets, No. 24	5.10c.
Steel bands	4.25c.
Cold-finished steel bars	4.75c.
Structural rivets	4.25c.
Boiler rivets	4.25c.
Common wire nails, base per keg	\$2.80
Bolts and nuts, per cent off list	70-10

### Magnesite Brick

#### Per Net Ton

Standard f.o.b. Baltimore and Plymouth Meeting and Chester, Pa.	\$47.00
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Chemically bonded f.o.b. Baltimore, Plymouth Meeting and Chester, Pa.	57.00
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### Grain Magnesite

#### Per Net Ton

Imported, f.o.b. Baltimore and Chester, Pa. (in sacks)	\$45.00
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Domestic, f.o.b. Baltimore and Chester, in sacks	42.00
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Domestic, f.o.b. Chewelah, Wash.	24.00
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## RAW MATERIALS PRICES

### PIG IRON

#### No. 2 Foundry

F.o.b. Everett, Mass.	\$25.75
F.o.b. Bethlehem, Birdsboro, and Swedeland, Pa., and Sparrows Point, Md.	25.00
Delivered Brooklyn	27.27
Delivered Newark or Jersey City	26.39
Delivered Philadelphia	25.76
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Buffalo; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	24.00
F.o.b. Jackson, Ohio	25.75
Delivered Cincinnati	24.07
F.o.b. Duluth	24.50
F.o.b. Provo, Utah	21.00
Delivered San Francisco, Los Angeles or Seattle	25.00
F.o.b. Birmingham*	20.38

\* Delivered prices on southern iron for shipment to northern points are 88c a ton below delivered prices from nearest northern basing point on iron with phosphorus content of 7% and over.

#### Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same.

#### Basic

F.o.b. Everett, Mass.	\$25.75
F.o.b. Bethlehem, Birdsboro, and Swedeland and Steelton, Pa., and Sparrows Point, Md.	24.50
F.o.b. Buffalo	23.00
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	23.50
Delivered Cincinnati	24.01
Delivered Canton, Ohio	24.76
Delivered Mansfield, Ohio	25.26
F.o.b. Jackson, Ohio	25.50
F.o.b. Birmingham	19.00

#### Bessemer

F.o.b. Everett, Mass.	\$26.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa.	26.00
Delivered Boston Switching District	26.50
Delivered Newark or Jersey City	27.39
Delivered Philadelphia	26.76
F.o.b. Buffalo and Erie, Pa., and Duluth	25.00
F.o.b. Neville Island and Sharpsville, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago	24.50
F.o.b. Birmingham	25.50
Delivered Cincinnati	25.51
Delivered Canton, Ohio	25.76
Delivered Mansfield, Ohio	26.26

#### Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.

N. Y. .... \$28.50

#### Gray Forge

Valley or Pittsburgh furnace \$20.50

#### Charcoal

Lake Superior furnace .... \$26.50  
Delivered Chicago .... 29.54

#### Canadian Pig Iron

##### Per Gross Ton

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	\$21.00
No. 2 fdy., sil. 1.75 to 2.25	20.50
Malleable	21.00
Basic	20.50
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	\$22.50
No. 2 fdy., sil. 1.75 to 2.25	22.00
Malleable	22.50
Basic	22.00

### FERROALLOYS

#### Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.  
*Per Gross Ton*  
Domestic, 80% (carload) .... \$80.00

#### Spiegeleisen

##### Per Gross Ton Furnace

Domestic, 19 to 21%	\$26.00
50-ton lots 3-mo. shipment	24.00
F.o.b. New Orleans	26.00
Electric Ferrosilicon	
Per Gross Ton Delivered	
50% (carloads)	\$69.50
50% (ton lots)	77.00
75% (carloads)	126.00
75% (ton lots)	136.00

#### Silvery Iron

##### Per Gross Ton

F.o.b. Jackson, Ohio, 6.00 to 6.50%	\$28.50
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For each additional 0.5% silicon up to 17%. 50c. a ton is added.

The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Manganese, each unit over 2%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

#### Bessemer Ferrosilicon

##### F.o.b. Jackson, Ohio, Furnace Per Gross Ton

10.00 to 10.50%	\$33.50
10.51 to 11.00%	34.00
11.01 to 11.50%	34.50
11.51 to 12.00%	35.00
12.01 to 12.50%	35.50
12.51 to 13.00%	36.00
13.01 to 13.50%	36.50
13.51 to 14.00%	37.00
14.01 to 14.50%	37.50
14.51 to 15.00%	38.00
15.01 to 15.50%	38.50
15.51 to 16.00%	39.00
16.01 to 16.50%	39.50
16.51 to 17.00%	40.00

Manganese 2 to 3%, \$1 a ton additional. For each unit of manganese over 3%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

#### Other Ferroalloys

##### Ferro tungsten, per lb contained W del., carloads

.... \$1.35

Ferro tungsten, lots of 5000 lb. 1.40

Ferro tungsten, smaller lots ... 1.45

Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr per lb. contained Cr delivered, in carloads, and contract ..... 10.00c.

Ferrochromium, 2% carbon ..... 16.50c. to 17.00c.

Ferrochromium, 1% carbon ..... 17.50c. to 18.00c.

Ferrochromium, 0.10% carbon ..... 19.50c. to 20.00c.

Ferrochromium, 0.06% carbon ..... 20.00c. to 20.50c.

Ferrovanadium, del. per lb. contained V. .... \$2.70 to \$2.90

Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y. .... \$2.50

Ferrocobaltititanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton ..... \$137.50

Ferrocobaltititanium, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract, per net ton ..... 142.50

Ferrophosphorus, electric, or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton ..... 58.50

Ferrophosphorus, electric, 24%, in carlots, f.o.b. Anniston, Ala., per gross ton with \$3 unitage, freight equalized with Nashville, Tenn. .... 75.00

Fermolybdenum, per lb. Mo del. .... 95c.

Calcium molybdate, per lb. Mo del. .... 80c.

Silico spiegel, per ton, f.o.b. furnace, carloads ..... \$38.00

Ton lots or less, per ton ..... 42.00

Silico-manganese, gross ton, delivered.

2.50% carbon grade ..... 89.00

2% carbon grade ..... 94.00

1% carbon grade ..... 104.00

Note: Spot prices are \$5 a ton higher except on 75 per cent ferrosilicon on which premium is \$10 a ton.

#### ORES

##### Lake Superior Ores

##### Delivered Lower Lake Ports Per Gross Ton

Old range, Bessemer, 51.50% .. \$5.25

Old range, non-Bessemer, 51.50% 5.00

Mesabi, Bessemer, 51.50% ..... 5.00

Mesabi, non-Bessemer, 51.50% .. \$4.95

High phosphorus, 51.50% ..... 4.85

#### Foreign Ore Per Unit

Iron, low phos., copper free, 55 to 58% dry, Algeria..... 13.50c.

Iron, low phos., Swedish, average, 68½% iron..... Nominal

Iron, basic or foundry, Swedish, aver. 65% iron..... 10.00c.

Iron, basic or foundry, Russian, aver. 65% iron..... Nominal

Man, Caucasian, washed 52% ..... 34c.

Man, African, Indian, 44-48% ..... 25c. to 30c

Man, African, Indian, 49-51% ..... 30c.

Man, Brazilian, 46 to 48½% ..... Nominal. 25c. to 30c.

#### Per Net Ton Unit

Tungsten, Chinese, wolframite, duty paid delivered nominal ..... \$18.00 to \$18.50

Tungsten, domestic, scheelite delivered, nominal ..... \$18.00

Chrome ore (lump) c.i.f. Atlantic Seaboard, per net ton:

South African ..... \$16.00

Rhodesian, 45% ..... 23.00

Rhodesian, 48% ..... 25.00

Turkish, 48-49% ..... 22.00 to \$22.50

Turkish, 45-46% ..... 20.00 to 20.50

Turkish, 44% ..... 18.00

Chrome concentrates (Turkish) c.i.f. Atlantic Seaboard, per gross ton:

52% ..... \$25.00 to \$25.50

50% ..... 24.00

48-49% ..... 22.00 to 22.50

### FLUORSPAR

#### Per Net Ton

Domestic, washed gravel, 85-5, f.o.b. Kentucky and Illinois mines, all rail ..... \$18.00

Domestic, barge and rail ..... 18.50

No. 2 lump, 85-5, f.o.b. Kentucky and Illinois mines ..... 20.00

Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid ..... 24.50

Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silicon, f.o.b. Illinois and Kentucky mines ..... 35.00

### FUEL OIL

#### Per Gal

F.o.b. Bayonne or Baltimore, No. 3 distillate ..... 4.25c.

F.o.b. Bayonne or Baltimore, No. 4 industrial ..... 3.75c.

Del'd Ch'go, No. 3 industrial 4.25c.

Del'd Ch'go, No. 5 industrial 3.90c.

Del'd Cleve'd, No. 3 distillate.. 6.00c.

Del'd Cleve'd No. 4 industrial 5.75c.

Del'd Cleve'd No. 5 industrial 5.00c.

### COKE AND COAL

#### Coke Per Net Ton

Furnace, f.o.b. Connells-ville, Prompt ..... \$4.25 to \$4.35

Foundry, f.o.b. Connells-ville, Prompt ..... 4.50 to 5.80

Foundry, by - product, Chicago ovens ..... 9.00

Foundry, by - product, del'd New England ... 12.00

Foundry, by - product, del'd Newark or Jersey City ..... 9.60 to 10.05

Foundry, by - product, Philadelphia ..... 9.85

Foundry, by - product, delivered Cleveland ... 10.25

Foundry, by - product, delivered Cincinnati .. 9.75

Foundry, by - product, del'd Birmingham .. 6.50

Foundry, by - product, St. Louis, f.o.b. ovens. 8.00

Foundry, from Birmingham, f.o.b. cars docks, Pacific ports ..... 14.75

Coal Per Net Ton

Mine run steam coal, f.o.b. W. Pa. mines... \$1.50 to \$1.75

Mine run coking coal, f.o.b. W. Pa. .... 1.75 to 1.90

Gas coal, ¾-in. f.o.b. Pa. mines ..... 2.00 to 2.25

Mine run gas coal, f.o.b. Pa. mines ..... 1.80 to 2.00

Steam slack, f.o.b. W. Pa. Pa. mines ..... 1.00 to 1.25

Gas slack, f.o.b. W. Pa. mines ..... 1.20 to 1.45



## THIS WEEK'S MACHINE ...TOOL ACTIVITIES...

*Machine tool demand continues in satisfactory volume, with some districts reporting a "breathing spell."*

*Tool builders studying the effect of new material prices on costs and present profit margins.*

### Detroit

THERE is practically no change in the machinery market over that reported last week. Chief activity continues to center in the Windsor plant of the Chrysler Corp. where machinery is being lined up to produce Plymouth and Dodge cylinder blocks on a composite line. It now appears that the General Motors diesel which is to be made at the Cadillac plant will probably be run on a production schedule of 50 units a day, which will call for special-purpose equipment. Heretofore the engines had been built in the experimental machine shop of General Motors research department. It is even anticipated that this diesel project may be brought to the point where a separate building will be erected to house the equipment for making the engine block as well as the fuel injection system for both the truck engines and the Winton diesels now made at Cleveland.

Among the plants that are inquiring for machinery to increase production on 1938 runs are the Chrysler Jefferson Avenue plant, where six-cylinder blocks are made for both Chrysler and DeSoto units, the Dodge plant on transmissions for the above engines, Plymouth, Oldsmobile and Pontiac. It is expected that Chevrolet will make few mechanical changes next year and these can largely be taken care of by changes in tooling without the necessity of buying new equipment.

### Pittsburgh

A SATISFACTORY volume of machine tool business was transacted by local dealers in February, and total orders compared favorably with previous months. Although inquiries have been fair since March 1, orders have leveled off to some extent. Some dealers are getting a breathing spell for the first time in several months. The recent recession in business transactions is regarded as a temporary condition. The recently announced higher steel prices are causing some discussion

among the trade as to the probable trend of machine tool prices. Some tool manufacturers who advanced prices at the beginning of the year have sent out new price lists reflecting higher quotations.

### Cincinnati

ALTHOUGH demand for machine tools continues at high rate, failure of foundries to complete flood rehabilitation, water destruction of patterns and lack of ample skilled labor are tending to retard production. New business from widely scattered sources, both domestic and foreign, is almost brisk for all types of tools. In addition, the trade is expecting early releases of automotive programs which will add materially to the already active market. Flood damage to foundries has not been totally erased, and operations are still under needed rate. As a result, tool builders are unable to obtain full quota of requirements and are forced to shift operations to conform to castings inventories. Even more restrictive, however, is the problem of patterns, a large number of which were rendered useless by water. Replacement is proceeding rapidly, but substantial relief is not likely for another month.

The labor supply is still short, and the need for skilled men still persists. This is retarding operations also, although the average is about 75 per cent.

### New York

MACHINE tool sellers report larger bookings in February than in January, and predict that March may be even better, judging from orders received this week. Shipments are unimproved. With pig iron, scrap and finished steel prices rising, some sellers are wondering what effect this situation will have on the selling prices of tools, which are being promised for delivery as far in advance as November, but are being booked at present

quotations. It is believed by some that mills may announce upward revisions to take care of this condition, although such a move is not expected in the immediate future. It is understood that the improved quality of steel and alloys has made possible recent changes in the design of tools, and some customers have machines ordered that are said to be the largest and best of their type ever constructed.

### Cleveland

DEALERS report a slowing down in miscellaneous orders for machine tools in this territory. Business with builders is holding up to the recent fair volume. There is considerable pressure for deliveries which, on some lines, are getting further behind, being extended as far as August and September. Deliveries by Cincinnati manufacturers have been seriously affected by the recent flood, production by at least one manufacturer having been interrupted as much as two months. The outstanding activity of the week was the purchase of seven or eight production machines by the Winton Motor Works, Cleveland. With higher pig iron and steel prices, there is already talk of another probable advance in machine tool prices.



Northern Pacific has placed contract for 200 cars as follows: 750 50-ton gondola cars to Pressed Steel Car Co., 250 70-ton gondola cars to American Car & Foundry Co., 500 50-ton flat cars to Bethlehem Steel Co., 500 50-ton box cars to Pacific Car & Foundry.

St. Louis & Southwestern will build five 4-8-4 type locomotives in shops at Pine Bluff, Ark.

Sante Fe has ordered one 3600-hp. diesel-electric locomotive from Electro-Motive Corp., and 52 stainless steel passenger coaches from Edward G. Budd Mfg. Co.

Seaboard Air Line is inquiring for ten tenders.

Great Western is inquiring for one light locomotive and one heavy locomotive of the 2-8-0 type.

Missouri, Kansas & Texas is inquiring for 50 70-ton hopper cars.

Canadian National is taking bids on 50 new passenger cars.

Central of Georgia has ordered five coaches and three express cars from Bethlehem Steel Co.

American Car & Foundry Motors Co. has received the following orders for motor coaches powered with Hall-Scott horizontal engine: Queens-Nassau Transit Lines, Inc., Long Island, N. Y., 55; Cumberland & Westernport Transit Co., Frostburg, Md., four; Southern Kansas Greyhound Lines, Inc., Kansas City, Mo., two; Southern Kansas Stage Lines Co., Wichita, Kan., 12; Staten Island Coach Co., Staten Island, N. Y., 30.



## PLANT EXPANSION AND EQUIPMENT BUYING

... Standard Oil Co. of Louisiana, New Orleans, plans additions to its refinery at Baton Rouge, La., to cost \$2,500,000 with equipment.

... Crown Can Co., Baltimore, plans an expenditure of \$400,000 for a new plant and equipment.

... Union Metal Products Co., Hammond, Ind., has let contract for a plant unit to cost \$300,000 complete

### ◀ NORTH ATLANTIC ▶

Coca-Cola Co., Atlanta, Ga., has let general contract to Stuart Construction Co., 516 Fifth Avenue, New York, for new plant at Kearny, N. J., on six acre-tract lately acquired, comprising one, two and three-story and basement main unit, 300 x 800 ft., and several smaller buildings. Cost close to \$800,000 with equipment. Robert & Co., Bona Allen Building, Atlanta, Ga., are architects and engineers.

Signal Corps Procurement District, Army Base, Fifty-eighth Street and First Avenue, Brooklyn, asks bids until March 24 for 110,000 ft. of submarine mine cable (Circular 133).

National Carbon Co., Inc., 30 East Forty-second Street, New York, manufacturer of electric batteries, welding carbons, electrodes, etc., has let general contract to H. K. Ferguson Co., Cleveland, for new one-story plant at Clarksburg, W. Va., 100 x 350 ft. Cost close to \$100,000 with equipment.

Dravo Corp., Neville Island, Pittsburgh, contractor for shaft and new link construction for water supply system for New York, has leased one-story buildings and yards at 14 Fisher Lane, White Plains, New York, for mechanical and construction shops in connection with contract noted.

Behr-Manning Corp., Sidford Street, Troy, N. Y., manufacturer of abrasive products, affiliated with Norton Co., Worcester, Mass., has let general contract to Morton C. Tuttle Co., Park Square Building, Boston, for one-story addition to plant at Watervliet, N. Y. Cost close to \$60,000 with equipment.

Bureau of Accounts and Supplies, Navy Department, Washington, asks bids until March 16 for 800 welder's helmets without lenses (Schedule 115), goggle frames and goggle lenses (Schedule 108) for Brooklyn Navy Yard; electric cable (Schedule 99) for Brooklyn, Mare Island and Puget Sound yards.

Edelbrau Brewery, Inc., 1 Bushwick Place, Brooklyn, recently organized by William Jagger and associates, to take over Goldenrod Brewery, Inc., address noted, plans expansion and improvements, including additional equipment.

Superintendent of Lighthouses, St. George, Staten Island, New York, asks bids until March 15 for about 76,000 lb. wrought iron open link buoy and bridle chain, up to 1½ in. dia., about 73,000 lb. open link wrought iron buoy chain in 15-fathom lengths, and

about 4000 lb. open link wrought iron chain bridles for buoys (Proposal 53192); about 3570 lb. open link wrought iron buoy chain in 15-fathom lengths and about 690 lb. open link wrought iron chain bridles for buoys (Proposal 53194); 75 fathoms 1¼-in. diameter wrought iron stud link chain with enlarged end links (Proposal 53195).

Coca-Cola Bottling Co. of New York, Inc., 431 East 165th Street, New York, has purchased one-story building, 38,000 sq. ft. floor space, at 3530 Thirty-eighth Street, Long Island City, and will remodel for branch plant, including storage and distributing facilities.

Westvaco Chlorine Products Corp., 405 Lexington Ave., New York, manufacturer of industrial chemicals, etc., has let general contract to H. K. Ferguson Co., Cleveland, for addition to plant of California Chemical Co., Newark, Cal., now being acquired as an affiliated interest. Cost close to \$1,000,000 with equipment.

H. A. Smith Machine Co., Hopewell, N. J., manufacturer of meter registers and screw machine parts, a unit of Pittsburgh Equitable Meter Co., 400 Lexington Avenue, Pittsburgh, has begun erection of a two-story addition, about 10,000 sq. ft. floor space, in part for storage and distribution. Cost close to \$40,000 with equipment.

Riegel Paper Corp., Milford, N. J., manufacturer of processed paper stocks, has let general contract to Austin Co., Philadelphia, for three additions, two one-story, 35 x 290 ft., and 60 x 170 ft., respectively, and one two stories, 100 x 120 ft., part for storage and distribution. Cost over \$85,000 with equipment.

Public Service Electric & Gas Co., Public Service Terminal, Newark, N. J., has arranged fund of \$8,900,000 for expansion and improvements in plants and system, including new 50,000-kw. turbo-generator and auxiliary equipment at Essex power station, new power substation and switching facilities, transmission line from Marion power substation, Jersey City, to Ridgefield Park, and another transmission line from Essex station to Metuchen, N. J.

Commanding Officer, Ordnance Department, Frankford Arsenal, Philadelphia, asks bids until March 16 for two salt pot furnaces, gas-fired (Circular 469); until March 18, one surface condenser equipment with single element air pump (Circular 466), six arbor presses (Circular 471).

Nute, McGhee, Geary Co., Chambersburg, Pa., manufacturer of iron castings, steam

turbines, parts, etc. plans rebuilding part of plant recently destroyed by fire. Loss close to \$50,000 with equipment.

H. J. Heinz Co., 3109 North Twelfth Street, Philadelphia, canned food products, has let general contract to Turner Construction Co., Seventeenth and Sansom Streets, for two-story plant unit, primarily for storage and distribution. Cost over \$100,000 with equipment.

### ◀ NEW ENGLAND ▶

International Silver Co., Meriden, Conn., has asked bids on general contract for four-story addition, for expansion in plating and finishing departments. Cost over \$125,000 with equipment. Company also has plans for two one-story additions to local plant H, operated under name of William Rogers Mfg. Co., the larger, 100 x 400 ft., for extensions in metal stamping division. Cost over \$150,000 with equipment. General contract has been let to Austin Co., Cleveland, for another one-story addition to last noted plant, for which superstructure will begin at once. Cost close to \$85,000 with equipment.

Judson L. Thomson Mfg. Co., South Street, Waltham, Mass., manufacturer of tubular rivets, rivet setting machines and kindred products, has plans for three-story and basement addition, 50 x 85 ft., in part for storage and distribution, also inspection division. Cost over \$60,000 with equipment. Arthur F. Gray, 29 Fayette Street, Watertown, Boston, is architect.

Commanding Officer, Ordnance Department, Springfield Armory, Springfield, Mass., asks bids until March 16 for one rubber-tired, gas-propelled wheeled warehouse tractor (Circular 162), seamless steel tubing (Circular 168).

Veeder-Root, Inc., Sargent Street, Hartford, Conn., manufacturer of counting devices and equipment, die-castings, metal stampings, etc., has let general contract to R. G. Bent Co., 93 Edwards Street, for four-story addition. Cost about \$150,000 with equipment.

Connecticut Power Co., New London, Conn., plans extensions and improvements in power plants and system, including installation of equipment, new transmission and distributing lines, power substation and switching stations and other facilities. Fund of \$1,300,000 has been arranged for work.

### ◀ BUFFALO DISTRICT ▶

Syracuse Stamping Co., 1044 South Clinton Street, Syracuse, N. Y., manufacturer of metal stampings, metal clamps and other metal products, will ask bids soon on general contract for one-story addition. Cost close to \$55,000 with equipment.

Otis Elevator Co., 162 Grider Street, Buffalo, will make extensions and improvements in local plant to accommodate additional lines of production, including elevator car frames, buffers and hydroelectric equipment for elevators, heretofore produced at other plants of company. Working force will be increased from 400 to 450 men. William E. Van Horn is plant manager at Buffalo.

Delco Appliance Corp., 391 Lyell Avenue, Rochester, N. Y., manufacturer of isolated electric plants, electric appliances, parts, etc., will take bids soon on general contract for five-story addition. Cost over \$175,000 with equipment. Company is a unit of General Motors Corp.

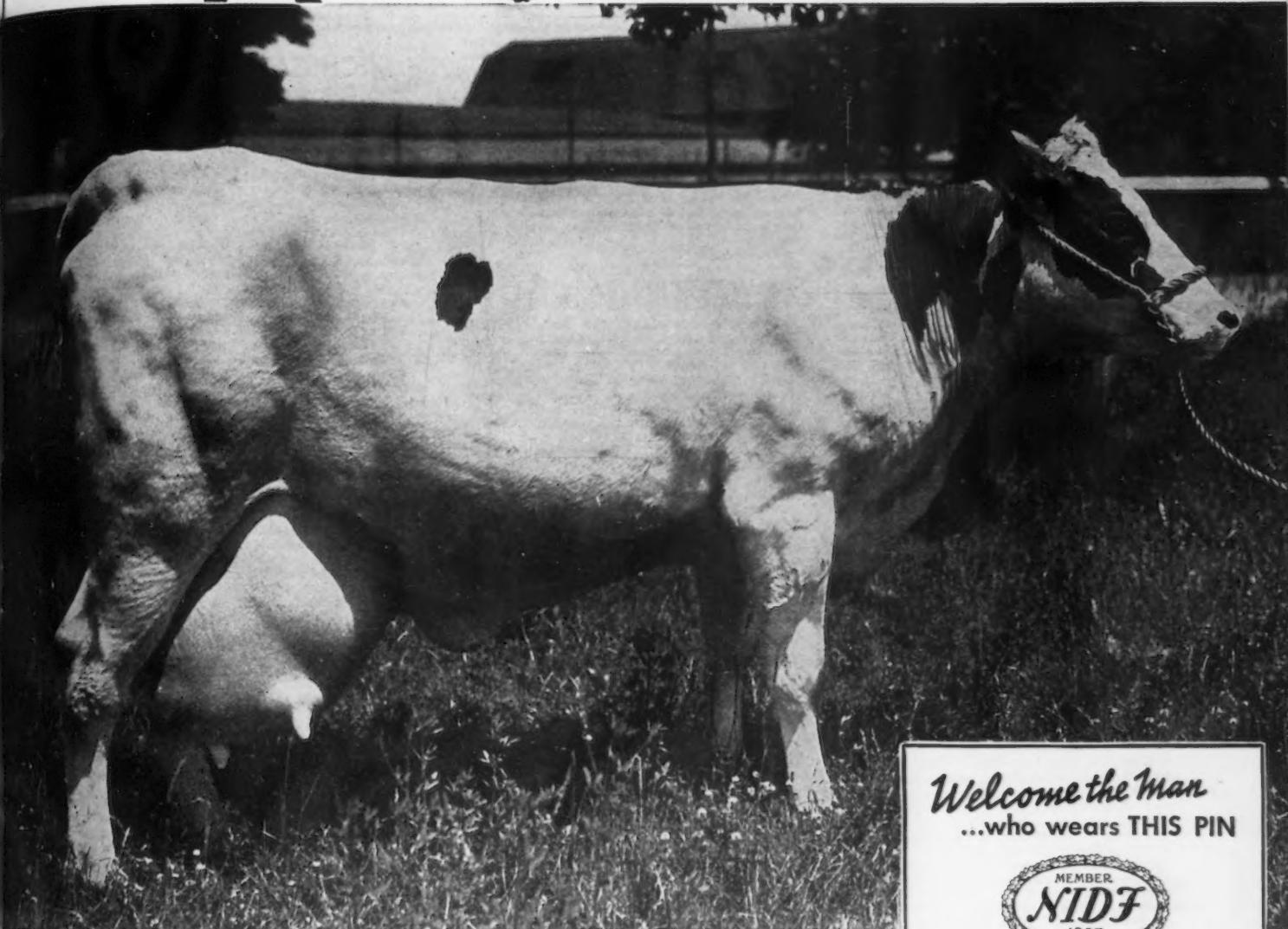
### ◀ WASHINGTON DIST. ▶

Maryland Bolt & Nut Co., Mount Washington, Baltimore, has let general contract to Engineering Contracting Corp., North and Linden Avenues, for one-story forge shop, replacing a unit recently destroyed by fire. Cost over \$35,000 with equipment. Oliver B. Wight, 2908 Southern Avenue, is architect.

General Purchasing Officer, Panama Canal, Washington, asks bids until March 19 for two one-ton geared pneumatic hoists, two 1000-lb. platform weighing scales, one 200-lb. automatic bench scale, one air compressor, one motor-driven air compressor, steel wire rope, galvanized wire rope clips, steel conduit, coil chain, copper cable, rubber insulated cable, apparatus type cable, tinned copper wire, pressure gage tester, 15,000 ft. galvanized steel wire cloth, copper wire cloth, chain shackles, galvanized turnbuckles, steel eye bolts and other equipment (Schedule 3229).

Crown Can Co., a unit of Crown Cork &

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TO HAVE a quart of fresh milk each day you don't have to keep a cow! You are able to get it without such trouble and expense because a local milk company provides a "cooperative service"...assumes the problems and costs of getting milk and delivering it to you and hundreds of other consumers like you.

In a similar way a recognized industrial distributor, identified with the National Industrial Distributors' Foundation, provides a "cooperative service" in your locality that enables you to avoid work and expense in getting the bulk of your

industrial supplies and equipment. He maintains complete and specialized facilities which relieve you of time-consuming, costly tasks in stocking to meet plant requirements.

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 of the Industrial Supply Research Bureau, 7th and Bainbridge Sts., Richmond, Va.; an activity of the National Supply & Machinery Distributors Assn.; Southern Supply & Machinery Distributors Assn.; and American Supply & Machinery Manufacturers Assn.



Seal Co., Eastern Avenue and Kresson Street, Baltimore, has let general contract to Consolidated Engineering Co., 20 East Franklin Street, for one and multi-story plant on I Street, Philadelphia. Cost close to \$400,000 with equipment.

**Norfolk & Western Railway Co.**, Roanoke, Va., Clyde Cocke, purchasing agent, asks bids until March 17 for requirements for one year for various electrical equipment, parts for electrical equipment, repair parts for mechanical stokers, etc. (Contract AA-705).

**Chemical Warfare Service**, Edgewood Arsenal, Md., asks bids until March 31 for lubricating type valves (Circular 122).

**Bureau of Supplies and Accounts**, Navy Department, Washington, asks bids until March 16 for 150,000 lb. special steel tees (Schedule 9280) for Portsmouth and Mare Island Navy yards; steel boiler tubes (Schedule 98), marker buoy cables (Schedule 102); until March 19, oil tanks for airplanes (Schedule 900-628), steel wire nails (Schedule 93); until March 23, lubricating pressure gun fittings (Schedule 110) for Eastern and Western yards; until March 23, boiler water testing outfits and spare parts (Schedule 117), boat anchors (Schedule 116), for Sewall's Point and Mare Island yards.

## SOUTH ATLANTIC ▶

**Dayton Rubber Mfg. Co.**, Wetzel Street, Dayton, Ohio, manufacturer of automobile tires and other rubber products, has purchased former plant of McLaren Rubber Co., Charlotte, N. C., manufacturer of kindred products, and will improve for new branch mill, with facilities for over 400 employees.

**Commanding Officer**, Ordnance Department, Augusta Arsenal, Augusta, Ga., asks bids until March 16 for pipe fittings, galvanized fittings, wrought iron welded pipe, unions, valves, etc. (Circular 13).

**United States Engineer Office**, Charleston, S. C., asks bids until March 17 for  $\frac{1}{4}$  and  $\frac{3}{8}$ -in. cast steel tiller rope,  $\frac{1}{8}$  and  $\frac{3}{16}$ -in. galvanized sash cord, and bronze core sounding line (Circular 61).

**Cudahy Packing Co.**, Union Stock Yards, Chicago, plans expansion in branch plant at Albany, Ga., including new units and equipment. Cost over \$70,000 with equipment.

## SOUTH CENTRAL ▶

**Board of Aldermen**, Oxford, Miss., asks bids until March 22 for 750-hp. diesel engine unit with auxiliary equipment for municipal power plant; also alternate bids on similar engine units up to 1000-hp. W. T. Chandler is city clerk.

**Goslin-Birmingham Mfg. Co.**, Birmingham, manufacturer of sugar machinery, parts, etc., plans rebuilding part of storage and distributing plant unit recently destroyed by fire. Loss about \$40,000 with equipment. Company is a subsidiary of Whiting Corp., Harvey, Ill.

**American Brewing Co.**, New Orleans, has approved plans for expansion and improvements, including addition for mechanical-bottling division, and installation of machinery in other departments. Cost about \$175,000 with equipment.

**United States Engineer Office**, First District, New Orleans, asks bids until March 15 for two electric generator sets, complete with accessories (Circular 206); until March 23, two 63-kva. diesel engine-generator sets, one switchboard for control and distribution of output of generator sets, and auxiliary equipment (Circular 194).

**Standard Oil Co. of Louisiana, Inc.**, St. Charles Avenue, New Orleans, plans addition to oil refinery at Baton Rouge, La., including units for production of lubricating oils, with pumping machinery, steel tanks and other equipment. Work will begin late in spring. Cost over \$2,500,000 with machinery.

## SOUTHWEST ▶

**Department of Public Utilities**, Blackwell, Okla., plans extensions and improvements in municipal electric power plant, including new boiler unit, stoker and auxiliary equipment. Fund of \$50,000 has been approved for work. E. E. Tierney is superintendent.

**United States Engineer Office**, Manufacturers' Exchange Building, Kansas City, Mo., asks bids until March 15 for carbon steel castings (Circular 458).

**Barnsdall Refining Corp.**, Petroleum

Building, Tulsa, Okla., has let contract to Frick-Reid Supply Corp., 117 Sandusky Street, Pittsburgh, for cracking machinery for new gasoline refinery on ship channel, Corpus Christi, Tex., and will place orders soon for miscellaneous equipment. Plant will include steel tank storage and distributing department and other units. Entire project will cost close to \$500,000 with machinery.

**City Council**, Paola, Kan., plans municipal electric power plant, with initial capacity of about 1000 kw., including distribution lines. Bond issue of \$225,000 is being arranged for project. W. B. Rollins & Co., Railway Exchange Building, Kansas City, Mo., are consulting engineers.

**Houston Milling Co.**, Houston, Tex., plans eight-story grain and feed milling plant at Manchester Docks, including three-story storage and distributing building and 100 ft. grain elevator. Cost about \$225,000 with elevating, conveying, loading, screening and other equipment.

**Talco Asphalt & Refining Co.**, Continental Building, Dallas, Tex., care of Capt. J. F. Lucey, same address, head, plans new oil refinery on site acquired at Mount Pleasant, Tex., including power plant, machine shop and other mechanical units, with steel tank storage and distributing department. Cost close to \$500,000 with machinery.

## WESTERN PA. DIST. ▶

**Duquesne Light Co.**, 435 Sixth Avenue, Pittsburgh, has approved plans for expansion and improvements in steam-operated electric generating plant on Brunots Island, including installation of 60,000-kw. turbine-generating unit and auxiliary equipment, two high-pressure boilers, stokers and miscellaneous equipment. Cost over \$3,500,000.

**Duraloy Co.**, South Twenty-sixth Street, Pittsburgh, manufacturer of alloy steel castings, has acquired former plant of United States Pipe & Foundry Co. at Scottdale, Pa., and will remodel for new plant to replace works at New Cumberland, W. Va., recently partially destroyed by fire. Equipment will be removed from last noted plant and additional machinery installed.

## OHIO AND INDIANA ▶

**Bevis Machine Co.**, 708 Central Avenue, Middletown, Ohio, manufacturer of machinery and parts, has plans for one-story addition. Cost close to \$45,000 with equipment. Roy Cheesman, 33 Central Avenue, Dayton, Ohio, is architect.

**Manufacturers & Fabricators, Inc.**, Cleveland, recently organized, has leased two-story building at 4391 Martin Avenue, S.E., about 35,000 sq. ft. floor space, and will improve for new structural steel fabricating works.

**Fox Furnace Co.**, Elyria, Ohio, manufacturer of heating furnaces and parts, has let general contract to T. J. Hume Co., 435 Hamilton Street, Lorain, Ohio, for one and two-story addition, about 55,000 sq. ft. floor space, for storage and distribution. Cost close to \$75,000 with equipment. Silsby & Smith, Turner Building, are architects. Company is affiliated with American Radiator & Standard Sanitary Corp., New York.

**Crosley Radio Corp.**, 1329 Arlington Street, Cincinnati, has plans for one-story addition, 100 x 500 ft., to replace a structure destroyed by fire in recent flood. It will be used primarily for storage and distribution. Cost about \$100,000 with equipment.

**American Vineyards Corp.**, 2641 St. Clair Avenue, Cleveland, has plans for one-story addition to winery, 45 x 110 ft. Cost close to \$45,000 with equipment. M. P. Halperin, 3567 East 151st Street, is architect.

**United States Engineer Office**, Federal Building, Cincinnati, asks bids until March 19 for one air compressor, complete with natural gas-burning engine, safety valves, instrument panel and accessories (Circular 54).

**Contracting Officer**, Material Division, Wright Field, Dayton, Ohio, asks bids until March 15 for ball bearings (Circular 571), 24,000 radiator core tubes (Circular 570); until March 16, 11,400 ft. of  $\frac{1}{2}$  to 2-in. rigid steel conduit (Circular 574), oil cups and lubricators (Circular 553), one hand-operated hydraulic hoist, compass swinging base (Circular 575), one dolly assembly and one chuck assembly, compass swinging base (Circular 573); until March 17, rivets, washers and lock wash-

ers (Circular 560); until March 18, screws (Circular 569), impulse unit end assemblies, bomb release handle assemblies, and flare type rack assemblies (Circular 565).

**Wayne Works, Inc.**, North Sixteenth Street, Richmond, Ind., manufacturer of motor bus passenger bodies, parts, etc., has asked bids on general contract for one-story addition, 400 x 900 ft. Cost about \$250,000 with equipment.

**Union Metal Products Co.**, 4527 Columbia Street, Hammond, Ind., manufacturer of metal goods, has let general contract to Austin Co., 510 North Dearborn Street, Chicago, for one-story plant unit. Cost over \$300,000 with equipment. Main offices of company are at Chicago.

## MICHIGAN DISTRICT ▶

**Miller Tool & Mfg. Co.**, 1725 Sixteenth Street, Detroit, manufacturer of automobile tools, wrenches, etc., has asked bids on general contract for one-story addition. Cost close to \$45,000 with equipment. O'Dell & Rowland, Marquette Building, are architects.

**Nichols-Foss Packing Co.**, Bay City, Mich., food packer and canner, recently organized, has let general contract to Bay City Stone Co., Bay City, for one-story plant, with main unit, 80 x 136 ft., and steam power house, 40 x 60 ft. Cost over \$75,000 with equipment.

**Briggs Mfg. Co.**, 11631 Mack Avenue, Detroit, manufacturer of automobile bodies, plans rebuilding part of plant at Highland Park recently destroyed by fire. Loss over \$150,000 with equipment.

**City Council**, Zeeland, Mich., will ask bids soon on general contract for new municipal electric power plant. Cost about \$100,000. Ayers, Lewis, Norris & May, Ann Arbor, Mich., are consulting engineers.

**Palmer-Bee Co.**, Westminster Street and Grand Trunk Railroad, Detroit, manufacturer of power transmission and conveying machinery, parts, etc., plans one-story addition, primarily for expansion in assembling division. Company has arranged for bond issue of \$400,000, part of proceeds to be used for purpose noted.

**Metal Office Furniture Co.**, Grand Rapids, Mich., has plans for two two-story additions, primarily for storage and distribution. Cost over \$60,000 with equipment.

## MIDDLE WEST ▶

**Sheet Metal Co.**, 925-27 West Forty-ninth Place, Chicago, manufacturer of sheet metal products, has let general contract to California Construction Works, 2545 South Paulaski Road, for one-story addition, 50 x 125 ft. Cost close to \$45,000 with equipment.

**Swift & Co.**, Union Stock Yards, Chicago, has let general contract to James Stewart Corp., 343 South Dearborn Street, for new soy bean processing plant at Champaign, Ill., including power house and miscellaneous structures. Cost close to \$275,000 with equipment.

**Hummer Mfg. Co.**, Springfield, Ill., manufacturer of cream separators and other dairy house machinery, feed mills, etc., plans rebuilding part of plant recently destroyed by fire. Loss over \$150,000 with equipment. Company is operated by Montgomery Ward & Co., Chicago.

**Quartermaster**, Fort Des Moines, Des Moines, Iowa, asks bids until March 15 for stokers (Proposal 251-49).

**Town Council**, Ackley, Iowa, asks bids until March 22 for extensions and improvements in municipal electric power plant, including one 375-hp. diesel engine, direct-connected to 250-kw. generator, with exciter, cooling system and auxiliary equipment. Ralph W. Gearhart, 341 Twenty-first Street, S.E., Cedar Rapids, Iowa, is consulting engineer.

**Platte Valley Packing Co.**, Scottsbluff, Neb., food packer and canner, has let general contract to W. L. Yokom, Roshek Building, Dubuque, Iowa, for one-story packing plant, with storage and distributing buildings. Cost about \$160,000 with equipment.

**Purchasing Officer**, Department of Interior, Washington, asks bids until March 16 for one diesel engine-generator unit, complete with auxiliaries, switchboard, starting equipment and accessories; also for transformers and accessories, for Belton, Mont. (Proposal 2218).

**Chicago Flexible Shaft Co.**, 5600 West Roosevelt Road, Chicago, has let general

# New Industrial Literature

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**BROACHING MACHINES.**—Colonial Broach Co. has prepared a number of four-page bulletins on its various broaching machines, including single ram, high-speed "pullup," high-speed "pusher" and light-duty presses. A brief description of each type of equipment is given, plus a page of specifications for each model, including capacity, stroke, cutting and returning speed, floor space, weight and power requirements. There is also a bulletin available devoted to broach sharpening machines. Bulletin 3-123.

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contract to Campbell, Lowrie & Lautermilch Corp., 400 West Madison Street, for four-story addition. Cost over \$55,000 with equipment. Olsen & Urbain, 228 North LaSalle Street, are architects.

## ◀ PACIFIC COAST ▶

American Forge Co., 750 Ashby Avenue, Berkeley, Cal., has asked bids on structural steel for one-story addition. Cost about \$45,000 with equipment. Kaj Theill, 580 Market Street, San Francisco, is engineer.

Construction Service, Veterans' Administration, Washington, asks bids until April 13 for erection of shop building No. 17, totaling about 120,000 cu. ft., at institution at Roseburg, Ore.

Square D Co., 1318 East Sixteenth Street, Los Angeles, manufacturer of electric switches, circuit breakers and kindred products, has let general contract to Myers Brothers, 3407 San Fernando Road, for one-story addition, 50 x 110 ft., part of unit to be used for manufacturing and remainder for storage and distribution. Cost about \$60,000 with equipment. J. C. Austin and F. M. Ashley, Chamber of Commerce Building, are architects. Company headquarters are at Detroit.

Turner Machinery Co., 734 Bryant Street, San Francisco, manufacturer of machinery and parts, has plans for one-story machine shop at Folsom and Thirteenth Streets. Cost about \$30,000 with equipment. W. H. Ellison, 821 Market Street, is engineer.

Pacific Fence & Wire Co., 2105 S.E. Eleventh Street, Portland, Ore., has plans for new one-story factory, 50 x 100 ft. Cost about \$30,000 with equipment. Ernest Kroner, 1304 S.E. Pine Street, is architect.

Mountain States Power Co., Albany, Ore., plans addition to electric power plant at Stayton, Ore., including new generating

unit and auxiliary equipment. Cost about \$75,000.

Standard Brands of California, Inc., 245 Eleventh Street, San Francisco, food products, will begin superstructure soon for new four-story food packing and canning plant, 80 x 190 ft., at Mariposa and Carolina Streets, for which general contract recently was let to Austin Co. of California, Oakland. Cost over \$150,000 with equipment. E. A. Eames, 216 Pine Street, is architect.

Pacific Gas & Electric Co., 445 Sutter Street, San Francisco, has let general contract to Otis Smith, 201 San Anselmo Avenue, for one-story mechanical shop and utility building at San Rafael, Cal. Cost about \$35,000 with equipment.

## ◀ FOREIGN ▶

Air Ministry, Government of England, London, England, will take bids soon on general contract for initial units of new plant at Speke, near Liverpool, England, for manufacture of airplanes and parts, comprising group of one-story buildings for machine shops, foundry, assembling and other departments, on about 100-acre tract. Cost close to \$1,000,000 with equipment.

Carrier-Australasia, Ltd., Sydney, New South Wales, Australia, Noel P. Hunt, managing director, has plans for new works in Woolloomooloo district, Sydney, for production of air-conditioning equipment and systems, refrigerating machinery, parts, etc. Cost close to \$200,000 with machinery.

De Haviland Aircraft Co., Ltd., Lostock Lane, Bolton, England, manufacturer of airplanes and parts, has approved plans for new works, consisting of several one-story structures for foundry, machine works, assembling and other shops. Cost close to \$700,000 with equipment. Work will begin early in spring.

## British Defend Hot-Rolled Steel

LONDON (Special Correspondence).—Reference to the charges of unsuitable materials supplied to automobile manufacturers, which were made against the British iron and steel industry by the Society of Motor Manufacturers and Traders, are contained in the current number of the *Lysaght Review*. Details of the complaint are now being investigated by the Iron and Steel Industrial Research Council.

The author of the article, which deals with the organizations controlled by John Lysaght, the steelmakers, does not purport to present an adequate reply to the general indictment. However, dealing broadly with the matter, it points out that British sheet makers have met practically the entire needs of the automobile industry. The superiority of the American cold-reduced deep-drawing steel over the British hot-rolled product, it is contended, has not been established in fact. The automobile industry, however, prefers the American product.

There is only one important British automobile body press-shop, the article states, that has had experience during the past

year of the press performance of any considerable tonnage of the American cold-reduced material. The article gives the following figures for two test press runs on the same rear-quarter panel: Lysaght (hot-rolled), 1250 runs and 1 scrap panel; American (cold-reduced), 1279 runs and 66 scrap panels.

In conclusion, the review expresses the conviction that "all-round performance in a good British press-shop using hot-rolled sheets will hold its own against the results recorded in American plants on cold-reduced material."

## Aircraft Building Nears Completion

CONSTRUCTION of a large new plant for the manufacture and development of naval and commercial aircraft is nearing completion on a 120-acre site at Bethpage, N. Y., for the Grumman Aircraft Engineering Corp. The plant is being erected by the Austin Co. It includes a manufacturing building 180 x 400 ft., a hangar 100 ft. square, and a two-story office building, all connecting.

Production of the company's newly developed twin motor amphibian, which has been designed for commuter service and carries four passengers, pilot, and co-pilot, as well as the manufacture of six different types of naval aircraft, will be transferred to the new plant this spring.

Extensive use of poured-in-place concrete in the architectural detail and horizontal sash throughout the building will impart a distinctly modern appearance that is to be carried out inside the office building through the extensive use of wood veneers and other modern decorative materials.

## Great Lakes Steel to Build Blast Furnace

CONSTRUCTION of an additional blast furnace at the plant of Great Lakes Steel Corp., Detroit, has been authorized by the board of directors of National Steel Corp.

The new furnace will be one of the largest ever built. Construction will be started immediately, and it is expected that the furnace will be in operation on Dec. 1, 1937, according to George R. Fink, president Great Lakes Steel Corp. and of National Steel Corp. It will have a nominal capacity of 1000 tons daily and will cost about \$2,500,000.

The Great Lakes blast furnace plant is located at Delray, Mich., a short distance from the company's main plant at Ecorse. The new furnace will be in addition to the present equipment of the plant, which includes two blast furnaces and auxiliary facilities.

Extensive modernization of the blowing and power equipment of the blast furnace plant has just been completed. Through this program, provision has already been made for the additional facilities that will be required by the expansion of operations.

The enlarged blast furnace plant, Mr. Fink said, will supply increased capacity sufficient to provide amply for all hot metal requirements of the company. The molten pig iron produced at the blast furnaces is transported in 110-ton hot metal mixer cars for direct charging into the open hearth furnaces at the steel plant.

Contract for the design and construction of the new furnace plant has been awarded to Arthur G. McKee & Co., Cleveland.